Joint Service Chemical and Biological Defense Program FY 06-07 Overview

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The mission of the Department of Defense's (DoD) Joint Chemical and Biological Defense Program (CBDP) is to ensure that the U.S. military has the capability to operate effectively and decisively in the face of Chemical, Biological, Radiological and Nuclear (CBRN) threats in both warfighter and homeland security missions. In order to accomplish this mission, the CBDP works to advance national interests within the CBRN defense arena by working effectively with other federal agencies, state and local governments, Congress, and the private sector. This document provides a synopsis of our goals for Fiscal Years 2006-2007 (FY06-07). Additionally, the DoD Annual Report to Congress on the Chemical and Biological Defense Program provides a more detailed overview of the CBDP, as well as a more detailed examination of the Program's objectives for the future.

The April 2003 Implementation Plan for the Management of the DoD CBDP redefined the roles and responsibilities and provided implementing procedures for management of the CBDP. The Joint Requirements Office for Chemical, Biological, Radiological and Nuclear defense successfully assumed the lead in articulating the Services CBRN defense requirements and has led the effort to prepare a fully coordinated and integrated CBDP Program Objective Memorandum. Furthermore, the Implementation Plan assigned to the Defense Threat Reduction Agency the responsibility for management and integration of all Chemical Biological (CB) science and technology efforts. To ensure the leveraging of all aspects of DoD's threat reduction activities, Joint Program Executive Office for Chemical and Biological Defense provides centralized program management and Joint Service acquisition integration for all medical and non-medical CB defense programs. This year's pamphlet further elaborates on two areas. First, there is an expanded description of our research efforts with our Science and Technology funding. Second, there is a description of our management initiatives in the Test and Evaluation arena, with a new section outlining the program's test and evaluation challenges, tenets, and capabilities.

All of these management and oversight changes have matured and demonstrated their effectiveness since the last version of this pamphlet was printed. The current environment demands a CBDP that is visionary, able to respond quickly to warfighter and national security needs, and streamlined with authority and accountability vested in specific executives. The Department will continuously assess its progress, ever striving to ensure that the U.S. military has the capabilities and information to operate effectively and decisively in the face of CBRN threats, in warfighter and homeland security missions, today and through the challenges of tomorrow.

Dr. Dale E. Klein
Assistant to the Secretary of Defense for
Nuclear and Chemical and Biological Defense Programs

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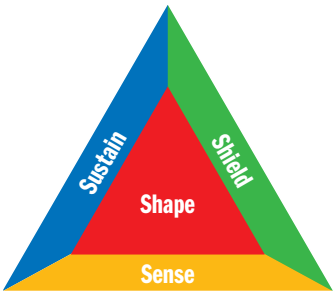
Capabilities Based Requirements

The *2001 Quadrennial Defense Review* ushered in a new approach to structuring and equipping U.S. Forces. Previously, a threat-based approach to determine requirements was employed—an approach that focused on defining specific adversaries and scenarios that might threaten U.S. interests. The new approach is based on assessing what is needed in order for the United States to defeat a broad array of capabilities that any adversary might employ. This new capabilities-based approach stems from the recognition that we do not know the true face of our next adversary or the exact method of engagement. The threat could come from terrorists, a traditional state-on-state conflict or some entirely new form of attack. Basing our planning on capabilities provides a framework for achieving full spectrum dominance while supporting President Bush's commitment that: "Every dollar of defense spending must meet a single test: It must help us build the decisive power we will need to win the wars of the future."

Amplification of the capabilities-based approach began to take shape in the Joint Staff white paper *An Evolving Joint Perspective: U.S. Joint Warfare and Crisis Resolution in the 21st Century,* which was endorsed by the Joint Requirements Oversight Council (JROC) in January, 2003. In June, 2003, the Joint Chiefs of Staff (JCS) established the Joint Capabilities Integration and Development System (JCIDS), which defined the process and roles of all participants. Finally, in November, 2003, the overarching concept regarding the conduct of future joint military operations was described in the document, *Joint Operations Concepts (JOpsC).* The Secretary of Defense's forward to that document states that this document provides the "…construct for the development of subordinate operating, functional, and enabling concepts that will identify emerging capabilities across the domains of air, land, sea, space, and information. It is transformational and will act as the genesis for new ideas and concepts…"



Range of Military Operations

1. Major Combat Operation
2. Stability Operations
3. Homeland Security
4. Strategic Deterrence

Required capabilities of the joint force are identified by considering a set of Joint Operations Concepts (JOC) that describe how the future joint force will operate within specified segments of the Range of Military Operations (ROMO) [see table].

Using the JOpsC and JOCs for their operational context, joint functional concepts are developed by Functional Capability Boards (FCBs) to amplify particular military functions as they apply broadly across the ROMO. Eight functional concept categories have been identified by the Joint Chiefs of Staff [See table]. The JROC will provide guidance for these joint functional concepts to ensure seamless development.

Joint Functional Concepts

- Network-Centric Operations
- Joint Command and Control (JC2)
- Joint Training
- Joint Management
- Battlespace Awareness
- Force Application
- Focused Logistics
- Force Protection

The balance of this Joint Service Chemical and Biological Defense Program Report focuses on the status and contribution of significant current and emerging systems.

Support to Joint Vision 2020

In the year 2020, our nation will require a military that can both win wars and contribute to peace as we encounter a wide range of interests, opportunities, and challenges. The strategic concepts of decisive force, power projection, overseas presence, and strategic agility will continue to govern our efforts to fulfill those responsibilities and meet the challenges of the future. The joint force, because of its flexibility and responsiveness, will remain the key to operational success in the future. The integration of core competencies provided by the individual Services is essential to the Joint team, and the employment of the capabilities of the Total Force (active, reserve, guard, and civilian members) increases the options for the commander and complicates the choices of our opponents. To build the most effective force for 2020, we must be fully joint: intellectually, operationally, organizationally, doctrinally, and technically.

The overarching focus of this vision is **Full Spectrum Dominance**—achieved through the interdependent application of dominant maneuver, precision engagement, focused logistics, and full dimensional protection.

Dominant Maneuver is the ability of joint forces to gain positional advantage with decisive speed and overwhelming operational tempo in the achievement of assigned military tasks. Widely dispersed joint air, land, sea, amphibious, special operations and space forces, who are capable of scaling and massing force or forces and the effects of fires as required for either combat or noncombat operations, to secure advantage across the range of military operations through the application of information, deception, engagement, mobility and counter-mobility capabilities.

Precision Engagement is the ability of joint forces to locate, surveil, discern, and track objectives or targets; select, organize, and use the correct systems; generate desired effects; assess results; and reengage with decisive speed and overwhelming operational tempo as required, throughout the full range of military operations.

Focused Logistics is the ability to provide the joint force the right personnel, equipment, and supplies in the right place, at the right time, and in the right quantity, across the full range of military operations. This will be made possible through a real-time, web-based information system providing total asset visibility as part of a common relevant operational picture, effectively linking the operator and logistician across Services and support agencies.

Full Dimensional Protection is the ability of the joint force to protect its personnel and other assets required to decisively execute assigned tasks. Full dimensional protection is achieved through the tailored selection and application of multilayered active and passive measures, within the domains of air, land, sea, space, and information across the range of military operations with an acceptable level of risk.

The requirement for global operations, the ability to counter adversaries who possess Weapons of Mass Destruction (WMD), and the need to shape ambiguous situations at the low end of the range of operations will present special challenges to achieving full spectrum dominance.

Adversaries will attempt to create conditions that effectively delay, deter, or counter the application of U.S. military capabilities. The asymmetric methods and objectives of an adversary are often far more important than the relative technological imbalance between two adversaries, and the psychological impact of an attack might far outweigh the actual physical damage inflicted. An adversary may pursue an asymmetric advantage on the tactical, operational, or strategic level by identifying key vulnerabilities and devising asymmetric concepts and capabilities to strike or exploit them. To complicate matters, our adversaries may pursue a combination of asymmetric warfare options, or the United States may face a number of adversaries who, in combination, create an asymmetric threat. These asymmetric threats are dynamic and subject to change, and the U.S. Armed Forces must maintain the capabilities necessary to deter, defend against, and defeat any adversary who chooses such an approach.

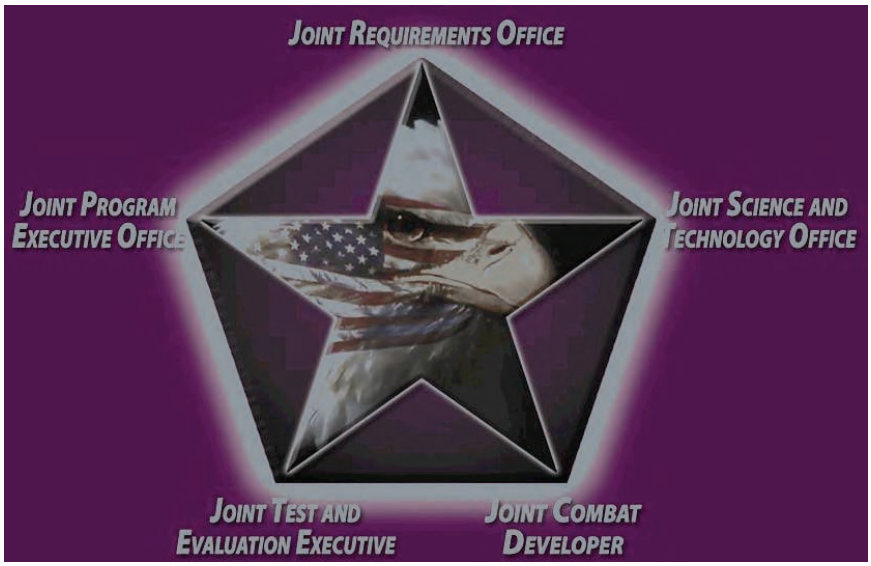
This vision recognizes the importance of technology and technical innovation to the U.S. military and its operations. At the same time, it emphasizes that technological innovation must be accompanied by intellectual innovation leading to changes in organization and doctrine. Only then can we reach the full potential of the joint force—decisive capabilities across the full range of military operations.

The Chemical and Biological Defense Program (CBDP) addresses the Doctrine, Organization, Training, Material, Leadership and Education, Personnel, and Facilities (DOTMLPF) to counter the current and emerging asymmetric threats; ensuring our forces are equipped and trained to protect themselves and minimize the effects of WMD on the battlefields of today and tomorrow.

Joint Management Structure

In accordance with 50 USC 1522, Research, Development, and Acquisition (RDA) of Chemical and Biological (CB) defense programs* within the Department of Defense (DoD) are overseen by a single office within the Office of the Secretary of Defense. The Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs, ATSD(NCB), serves as this single office. This section describes the management and oversight processes and activities related to the effective oversight and management of the Department's CB Defense Program (CBDP). The CBDP mission is to provide CB defense capabilities to effectively execute the *National Strategy for Combating Weapons of Mass Destruction,* and to ensure all capabilities are integrated and coordinated.

Key organizational relationships within the DoD CBDP are portrayed in the adjacent figure. The CBDP management structure applies to the processes (1) to provide policy guidance (2) to conduct planning, programming, budgeting, and execution of CBRN defense research, development and acquisition, (3) to establish military requirements for CBRN defense, (4) to test and evaluate CBRN defense programs, (5) to manage chemical and biological defense science and technology programs, (6) for program analysis and integration, and (7) for program oversight.

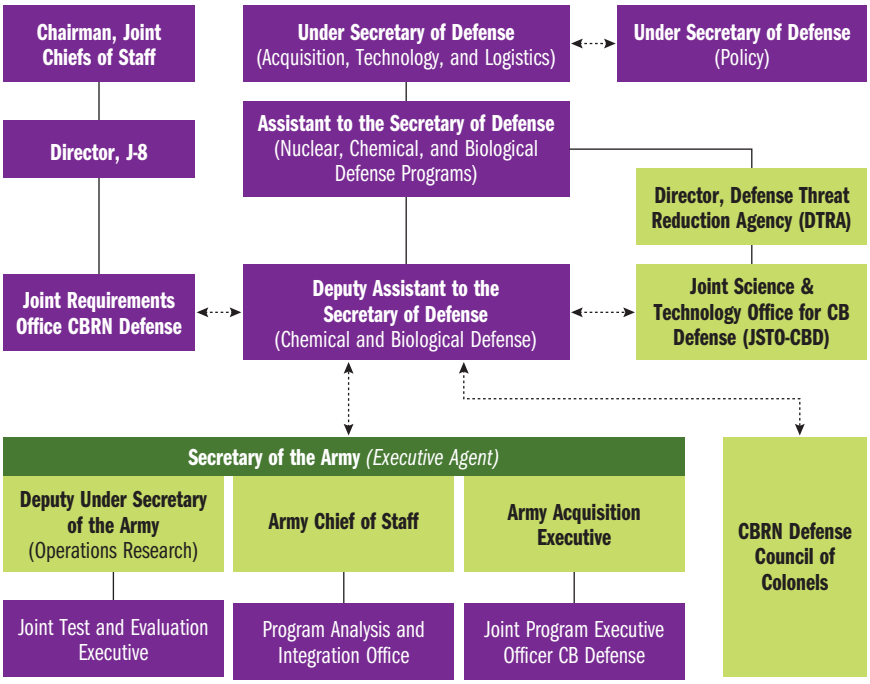


The Under Secretary of Defense for Policy (USD(Policy)) is the policy advisor for the DoD CBDP, providing oversight and guidance to ensure that CBDP activities support defense planning guidance and forces policy, Department of Defense relations with foreign countries and the Department's role in U.S. Government interagency policy making.

The Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) serves as the Defense Acquisition Executive (DAE) for the DoD CBDP. As the DAE, the USD(AT&L) serves as the Milestone Decision Authority (MDA) for the overall program and key selected systems—also referred to as "Sentinel" programs.

While total CBDP funding surpasses the funding threshold of a Major Defense Acquisition Program (MDAP), the CBDP is not categorized as an MDAP since no individual system reaches this funding threshold. USD(AT&L) funding oversight is tailored by creating an "index of systems" to measure performance of CBDP functional areas. These index systems are referred to as

*While the scope of the public law specifically addresses only chemical and biological defense RDA activities, DoD planning also includes radiological and nuclear defense along with chemical and biological defense in its planning activities. However, radiological and nuclear defense capabilities within the CBDP are limited to certain types of radiation detection equipment, modeling and simulation capabilities, and limited medical research on radioprotectants. Various other radiological and nuclear defense efforts, including such systems for nuclear and radiation hardening, nuclear detection, medical radiological defense, and other selected programs are outside the scope of the CBDP. These efforts are discussed where they are related to or complement CBDP efforts.



"Sentinel" systems. A Sentinel System is a program in advanced development, that represents a balance of cost, complexity, and criticality to justify the USD(AT&L) monitoring the cost, schedule, and performance of the Sentinel system.

The USD(AT&L) delegates Milestone Decision Authority for non-sentinel systems to the Army Acquisition Executive, who has further delegated MDA responsibility to the Joint Program Executive Officer for Chemical and Biological Defense (JPEO-CBD). This structure maintains a vertically integrated chain-of-command.

USD(AT&L) responsibilities include (1) approving Overarching CBDP Strategic Plan, (2) establishing a CBDP Overarching Integrated Product Team (OIPT) within the Office of the Secretary of Defense, (3) chairing DAE Oversight Reviews for the CBDP, and (4) approving recommended Program Objectives Memorandum (POM) and submitting to the Secretary of Defense.

The ATSD(NCB) serves as the single focal point within the Office of the Secretary of Defense (OSD) responsible for overall oversight, coordination and integration of the DoD CBDP. The ATSD(NCB) serves as the permanent chair of the CBDP Overarching Integrated Process Team (OIPT). The OIPT process supports overall CBDP oversight. The OIPT will oversee the following Working IPTs (WIPTs):

- **Joint Requirements**—Chaired by the JRO-CBRN Defense,
- **Science and Technology**—Chaired by DTRA(CB),
- **Test and Evaluation**—Chaired by the CBDP Test and Evaluation Executive,
- **Advanced Concept Technology Demonstration Oversight Group**—Chaired by Deputy Under Secretary of Defense for Advanced Systems and Concepts.

Membership in the OIPT and WIPTs includes all appropriate OSD, Service, Joint Staff, and Defense Agency stakeholders. In addition, the ATSD(NCB) has established a Council of Colonels, which serves as a Joint ad hoc body to address issues and Service concerns regarding all aspects of the CBDP.

The ATSD(NCB) provides oversight of the CBDP Science and Technology base (S&T) programs. Science and technology programs are reviewed at the Defense Technology Objective level through

the Technology Area Review and Assessment (TARA). The TARA includes a review of S&T programs by an independent panel of experts from academia, national laboratories, and other organizations. This panel provides assessments of key projects, overall areas within the program, and identifies any major findings or issues related to S&T.

The Deputy Assistant to the Secretary of Defense for Chemical and Biological Defense, DATSD (CBD), is the principal deputy to the ATSD(NCB) for CBDP matters, and the primary staff action office for ATSD(NCB) responsibilities. As the principal deputy, the DATSD(CBD) also supports the USD(AT&L) in carrying out its MDA and oversight responsibilities for the CBDP.

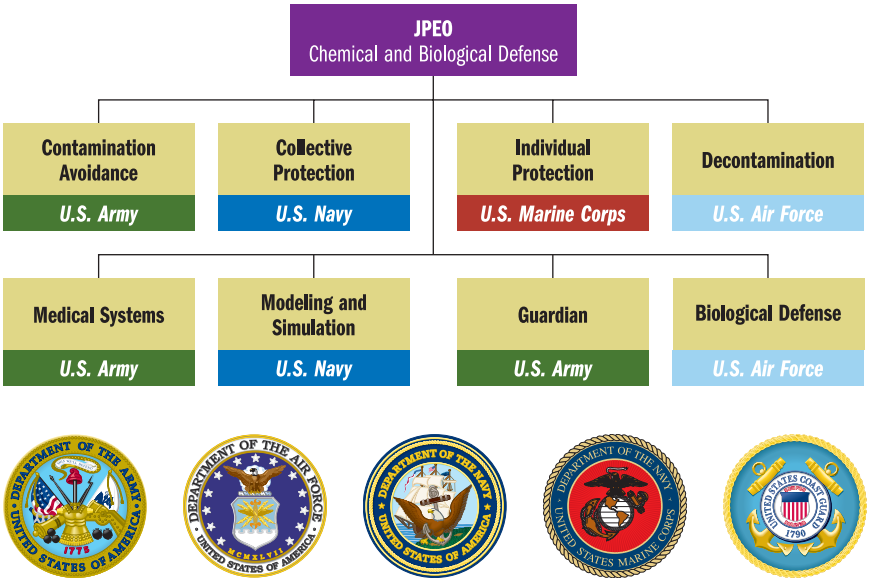
The JRO-CBRN Defense began official duties on October 1, 2002. The official charter was approved on February 4, 2003. The JRO-CBRN Defense coordinates with the combatant commands and Services to develop Joint CBRN requirements, and overarching CBRN defense architecture and a joint capabilities roadmap. The JRO-CBRN Defense defines the required system interoperabilities and operational architectures and validates the development of Joint CBRN defense capabilities through both simulation and technology demonstrations. These efforts will be documented in a Joint CBRN Defense Modernization Plan for validation by the Joint Requirements Oversight Council (JROC).

The JRO-CBRN Defense is a single office within DoD under the Chairman of the Joint Chiefs of Staff responsible for planning, coordination, and approval of joint CBRN defense operational requirements and serving as the focal point for Service, combatant command, and Joint Staff requirements generation. These responsibilities include development of CBRN defense operational requirements, joint operational concepts, and architectures for passive defense, consequence management, force protection, and homeland security. JRO-CBRN Defense leads the development of the DoD CBDP POM with JPEO and JSTO-CBD support in accordance with Section 6 of the Implementation Plan.

Each of the Military Departments—Army, Air Force, and Navy, including the Marines Corps—plan and execute CBRN defense programs, from basic research through procurement and sustainment. In fulfilling their responsibilities, the Military Departments ensure coordination and integration with other CBRN defense organizations. The following are selected responsibilities of the Military Departments within the CBDP:

- Validate Joint operational concepts and develop Service-sponsored CBRN defense requirements documents using the guidance set forth in the Joint CBRN Defense Modernization Plan. Where new materiel requirements are identified, submit requirement documents to the JRO and recommend for inclusion into the Modernization Plan.
- Include the participation of the JRO as early as possible in the concept development phase for potential CBRN defense requirements.
- Provide acquisition and fielding data for respective CBRN defense requirements to the JRO during development of the DoD CBDP Program Objectives Memorandum (POM).
- Support development of Service annexes to Joint CBRN defense requirement documents.
- Provide representatives to all appropriate CBRN defense meetings and organizations.
- Provide representatives for the CBDP Council of Colonels, which operates under the auspices of the ATSD(NCB) to address issues and Service concerns with all aspects of the CBDP.
- Conduct CBRN defense training, readiness, and sustainment.
- Participate in the review, development and validation of the Modernization Plan, Joint Future Operational Capabilities, and the Joint Priority Lists.
- Perform Service responsibilities to support Joint Programs as assigned by the JPEO-CBD. The following figure illustrates current Service responsibilities to support Joint Programs.

The Military Departments play a critical role in the execution of all phases of research, development, and acquisition. The Military Departments provide the essential infrastructure, which includes personnel with unique scientific, technical, and management expertise, and the



laboratory and test facilities to meet the demands of developing and fielding CBRN defense equipment. This includes capabilities for chamber testing of live chemical and biological agents and conducting a variety of tests. Selected key military facilities include the following:

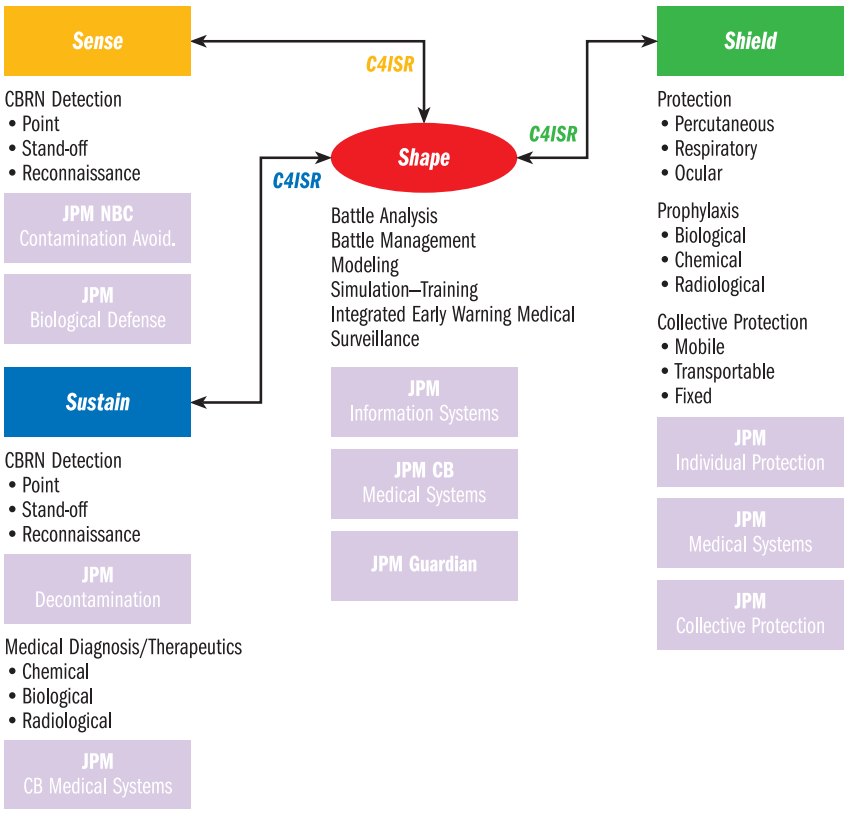
- U.S. Army Edgewood Chemical and Biological Center (ECBC)
- U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID)
- U.S. Army Medical Research Institute of Chemical Defense (USAMRICD)
- U.S. Navy Medical Research Center (NMRC)
- Naval Surface Warfare Center (NSWC), Dahlgren
- U.S. Air Force Operational Test & Evaluation Center (AFOTEC)
- Air Force Research Laboratory (AFRL)
- Marine Corps Operational Test & Evaluation Activity (MCOTEA)
- Operational Test & Evaluation Force (OPTEVFOR)

In accordance with 50 USC 1522, the Army serves as the Executive Agent for the CBDP and coordinates and integrates research, development, test and evaluation, and acquisition requirements of the Military Departments for CBRN defense programs of the DoD. The Secretary of the Army serves as the Executive Agent for the CBDP, and the Assistant Secretary of the Army for Acquisition, Logistics and Technology, ASA (ALT), serves as the Army Acquisition Executive (AAE). The following are selected key responsibilities of Army as the Executive Agent:

- Review all funding for the CBDP.
- Review and recommend approval of the CBDP POM.
- Serve as the Milestone Decision Authority (MDA) for delegated programs, with authority to delegate to the JPEO-CBD. (Note: While the USD(AT&L) is designated as the single MDA for the CBPD, MDA responsibility is delegated by the USD(AT&L) to the AAE. Thus there are two MDAs, though based on a single authority.)
- Serve as the Joint Service Materiel Developer to coordinate and integrate acquisition for the CBDP through the JPEO-CBD.
- Provide Program, Analysis and Integration functions for the CBDP.
- Provide the Test and Evaluation Executive for the CBDP.
- Serve as the Joint Combat Developer for the CBDP through the JRO.

The JPEO-CBD reports to the AAE and serves as the CBDP Material Developer and oversees Life Cycle Acquisition Management for assigned system acquisition programs within the CBDP. The JPEO-CBD provides centralized program management and Joint Service acquisition program integration for all assigned non-medical and medical chemical and biological defense programs. The following are selected key responsibilities of the JPEO-CBD:

- Serve as the CBDP Milestone Decision Authority for delegated programs.
- Develop and approve program and acquisition strategies.
- Provide the planning guidance, direction, control, and support necessary to ensure systems are developed in accordance with DoD acquisition guidance.
- Integrate interoperability with civilian emergency response agencies in the planning, guidance, direction, and control of newly acquired systems whenever possible.
- Oversee the development, coordination, and commitment to an acquisition program baseline and ensure immediate reporting of all imminent and actual breaches of approved baselines. In addition, ensure development of a recovery plan.
- Prepare required input to POM, Budget Estimate Submission, President's Budget, and other required documentation. Support development of the annual Research, Development and Acquisition (RDA) Plan in coordination with the Joint Science and Technology Office for Chemical and Biological Defense (JSTO-CBD) Manager and the Program Analysis and Integration Office (PAIO).
- Prepare the Joint Logistics Support Plan for medical and non-medical programs for which JPEO-CBD maintains Life Cycle Management to include sustainment in cooperation with the Services and in coordination with the JRO.
- Establish Technology Readiness Levels (TRLs) and conduct reviews to identify opportunities for transition of chemical and biological S&T programs to acquisition in conjunction with JSTO-CBD.
- Ensure interagency cooperation and timely transition of technologies to advanced development programs in order to reduce development cycle times.



- Develop and approve Test and Evaluation Master Plans (TEMP) for assigned programs.
- Provide technical and functional integration across assigned medical and non-medical programs. For medical programs, ensure integration with related DoD material programs required for force health protection.

The PAIO supports the CBDP by providing analysis to the OSD oversight office, JRO-CBRN Defense, JPEO-CBD and JSTO-CBD. The PAIO provides independent analysis functions to all other elements of the CBDP under operational direction of the Army Deputy Chief of Staff for Programs (G8) as the Army Executive Agent.

In support of the CBDP OIPT, the PAIO provides independent analysis for decision-makers review enabling them to make recommendations concerning impacts to the overall integrated CBDP. This analysis includes the CBDP oversight process, published plans, and overall programmatic health of the CBDP. The PAIO will review and analyze fiscal programs, requirements, resource planning, and resource allocation for the program years. The PAIO also maintains the DoD CBDP Future Years Defense Program (FYDP) and provides support to the JRO-CBRN Defense for the POM build. PAIO supports the JPEO and the Program Managers to perform defense acquisition functions necessary to guide assigned programs through each milestone within approved baselines.

The Joint CBDP Test and Evaluation Executive chairs the Test and Evaluation (T&E) Executive Working Integrated Process Team (WIPT), which is overseen by the ATSD(NCB). The Deputy Under Secretary of the Army for Operations Research, DUSA(OR), serves as the T&E Executive. Members of the T&E Executive WIPT include the Service T&E executive level representatives, JRO-CBRND, JPEO-CBD, JSTO-CBD, Operational Test Activity representatives, and the Director, Operational Test and Evaluation, DOT&E. This WIPT assists the CBDP T&E Executive to resolve major T&E and related issues, which are then documented in TEMPs and Test Plans for DOT&E approval, as appropriate. The T&E Executive also manages T&E infrastructure* to ensure that adequate T&E is conducted for CBDP systems, and is responsible for establishing test standards, processes, and procedures.

Under the direction of the JRO-CBRND, and supported by the Services and the U.S. Coast Guard (USCG), the Joint Combat Developer for CBRN Defense (JCD-CBRND) will coordinate and oversee execution of Joint and multi-Service experiments used to validate the Joint Integrating Concept for CBRN Defense by systematically exploring new and innovative combinations of medical and non-medical Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) capabilities.

Experiments will initially address the full spectrum of CBRN passive defense, force protection, consequence management, and homeland defense. The focus on CBRND limited scale experiments and capabilities differentiates the JCD-CBRND role from that of the much larger Joint Forces Command (JFCOM) role as the DoD Executive Agent for Joint Experimentation.

The JCD-CBRND concept experiments will complement the Science and Technology (S&T) and Advanced Development efforts managed by the JSTO-CBD and the JPEO-CBD, respectively. Where appropriate, and as directed by the JRO-CBRND, the JCD-CBRND will partner with the JFCOM in the broader DoD joint experimentation process.

Though the U.S. Army Chemical School (USAMCLS) provides a myriad of resources well suited for CBRND experimentation, the JCD-CBRND will take maximum advantage of other personnel, equipment, and facilities available throughout each of the Services, and other government organizations to reduce costs, shorten timelines, and improve experimental designs. Where

*The T&E infrastructure does not include the laboratory infrastructure, but rather is limited to those facilities that support developmental, operational, and related test and evaluation.

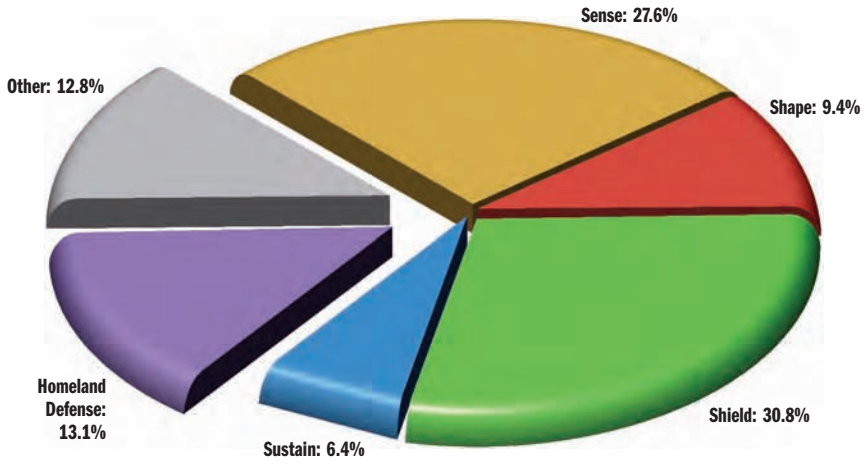
possible, the JCD-CBRND should strive to leverage planned exercises and other experiment venues outside of the CBDP.

DTRA serves two key roles in support of the DoD CBDP—Funds Manager and Joint Science and Technology Manager. The JSTO-CBD, provides management functions under the oversight of the ATSD(NCB) and integrates chemical and biological defense science and technology base (S&T) programs. The JSTO-CBD Science & Technology programs and initiatives focus on improving defensive capabilities against Chemical and Biological Weapons. The JSTO is responsible for providing candidate technologies and products in coordination with the JPEO-CBD to ensure effective transition of S&T efforts to advanced development. The JSTO also coordinates closely with the JRO and JPEO to validate requirements in accordance with JRO-CBRN Defense guidance, evaluate current capabilities and identify technology gaps for S&T investments. Additional responsibilities of the JSTO-CBD are as follows:

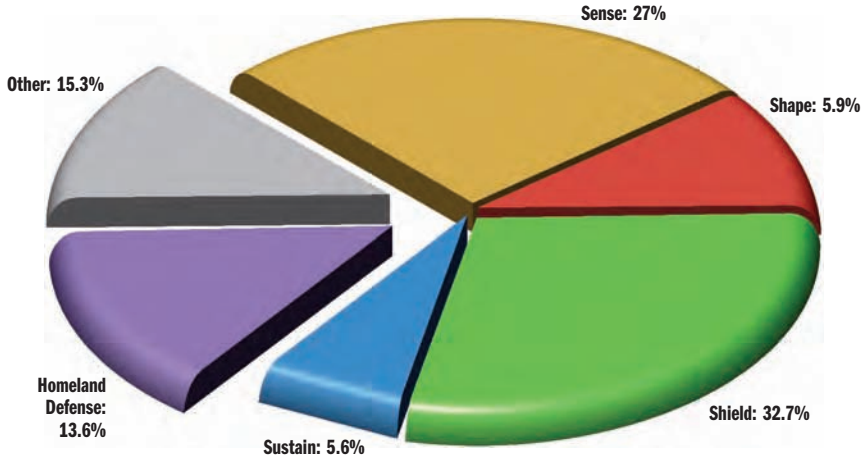
- The JSTO-CBD provides the necessary programming, planning, and budgeting documentation for chemical and biological defense S&T programs.
- Develops the annual CB S&T plan from external guidance. Develops a multi-year strategic program incorporating short and long term requirements.
- Provides input to the Defense Technology Area Plan (DTAP) and proposes suitable Defense Technology Objectives in coordination with the JRO and JPEO.
- Conducts studies and analyses to identify DoD CB defense core S&T competencies, coordinating the results to provide the basis of their sustainment and improvement.
- Integrates CB Defense Program S&T from all sources. Ensures integration of the program between medical and non-medical (Physical Security) S&T components.
- Collaborates with other federal agencies to avoid duplication of effort and to leverage other relevant research programs.
- Responsible for International CB Defense Science and Technology programs.
- Coordinates the nomination and approval process for CBDP-funded Advance Concept and Technology Demonstrations.
- Serves as the focal point for coordination of S&T programs transition to Advance Component Development & Prototype.
- Assesses candidate technologies to ensure they are appropriate for entry into the program.
- Encourages innovation in Basic Research and Exploratory Research projects. Outlines objective criteria establishing technology readiness levels through a Technology Development Strategy in 6.2 and 6.3 projects.
- Coordinates the application of Technology Readiness Levels (TRLs) with JPEO.
- Assesses S&T program compliance by means of Annual Program Reviews, Quarterly Transition Reviews, and biennial Technology Area Readiness Assessments (TARA).

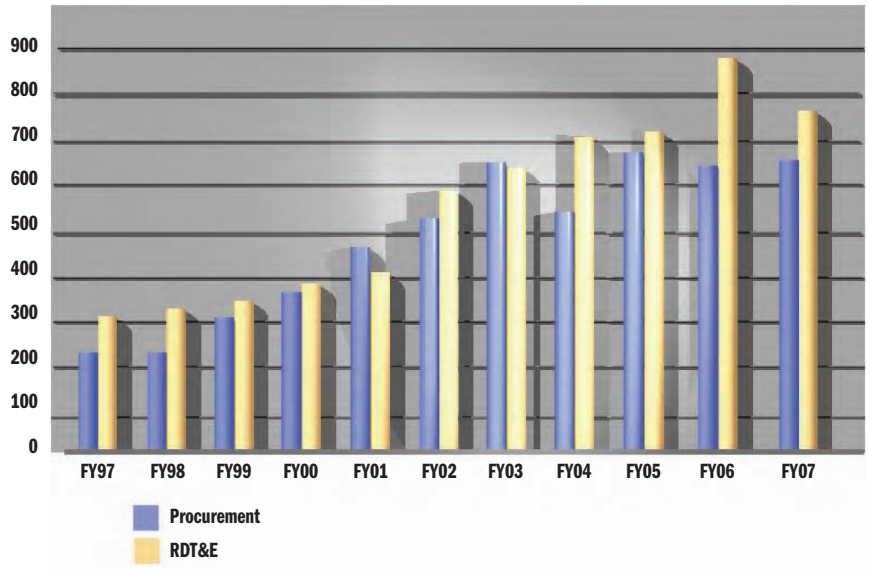
CBDP Funding

FY06 CBDP Funding Distribution (AS A PERCENTAGE OF TOTAL FUNDING)



FY07 CBDP Funding Distribution (AS A PERCENTAGE OF TOTAL FUNDING)





Chemical Biological Defense Capabilities Areas

Transition of the Chemical Biological Defense Program to the new capabilities based approach has resulted in realization of the first ever joint CBRN baseline assessment. The fit of the Chemical Biological Defense Program in the context of the new capabilities-based approach is depicted in the next graphic. What is clear from this depiction is:

1. CBRN is a major element of the Major Capability Area (MCA), Personnel Protection.
2. CBRN is related to many other functional areas, contributing directly to a synergystic advancement of capabilities. For example, a program such as the Joint Warning and Reporting Network (JWARN), designed to improve situational awareness-is related directly to the Joint Forces Commander (JFC) Battlespace Awareness.
3. CBRN developments have direct application to all aspects of Joint Operations, to include Homeland Security.
4. Finally, CBRN has a defined set of capability categories, i.e., SENSE, SHAPE, SHIELD, and SUSTAIN.

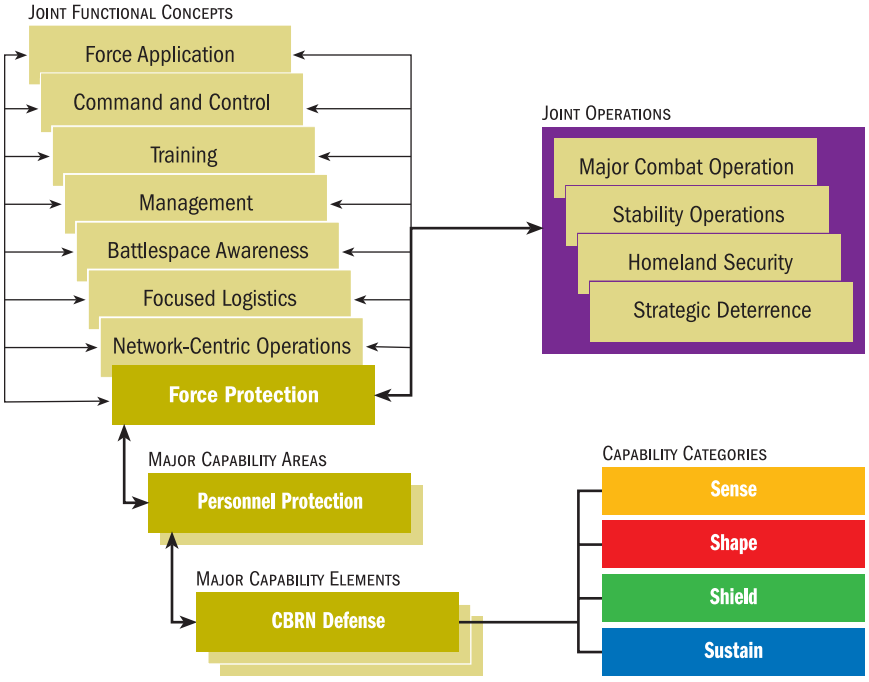
These Capability Categories define the discussion, assessment, and management of the Chemical and Biological Defense Program. Their definitions follow:

Sense

The capability to continually provide the information about the CBRN situation at a time and place by detecting, identifying, and quantifying CBRN hazards in air, water, on land, on personnel, equipment or facilities. This capability includes detecting, identifying, and quantifying those CBRN hazards in all physical states (solid, liquid, gas).

Shape

Provides the ability to characterize the CBRN hazard to the force commander; develop a clear understanding of the current and predicted CBRN situation; collect and assimilate information from sensors, intelligence, medical, etc. in near real time to inform personnel, provide actual and potential impacts of CBRN hazards; envision critical SENSE, SHIELD, and SUSTAIN end states (preparation for operations); visualize the sequence of events that moves the force from its current state to those end states.



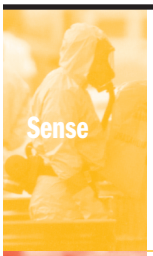
Shield

The capability to shield the force from harm caused by CBRN hazards by preventing or reducing individual and collective exposures, applying prophylaxis to prevent or mitigate negative physiological effects, and protecting critical equipment.

Sustain

The ability to conduct decontamination and medical actions that enable the quick restoration of combat power, maintain/recover essential functions that are free from the effects of CBRN hazards, and facilitate the return to pre-incident operational capability as soon as possible.

The table below identifies the operational elements included within each capability category, specific systems included within each category, and the performance criteria assessed in the course of the baseline evaluation.

Capability Category	Operational Elements	Current and Emerging Systems	Assessment Criteria
	Point Detection Chemical Point Detection Biological Point Detection Radiological NBC Recon Chemical Detection, Standoff Biological Detection, Standoff Radiological Detection, Standoff	JBAIDS JBPDS JSLNBCRS ACADA NBCRV JSLSCAD JBSDS	Detect Identify Quantify Interoperability Portable Quantity
	Battlespace Management Integrated Early Warning Battlespace Analysis	JWARN JEM JOEF	Data Transfer Distribute and Inform Output Generation Interoperability Quantity
	Respiratory and Ocular Protection Percutaneous Protection Expeditionary Collection Protection Medical Prophylaxis	JSGPM JSAM JSLIST MULO JPACE CBPS CPFH JSMLT JCPE CPS Backfit	Varies by element. For respiratory and ocular include: protection, mission performance, logistical supportability, and quantity. Medical criteria are more complex.
	Individual Decontamination Equipment Decontamination Fixed Site Decontamination Medical Diagnostics Medical Therapeutics	JSPDS JSTDS-SS JSSED	Effectiveness (CBR) Thorough Decon Throughput Safety of Use Utility Quantity

SENTINEL

Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)

- **Passive, stand-off chemical detection—up to 5 km**
- **Real-time, on-the-move operation**
- **Mounts on land, air, and sea platforms**
- **Key chemical sensor for the digitized battlefield with automated reporting**
- **Lightweight (45–57 lbs)**
- **First time ability to provide on-the-move, 360°, stand-off detection of CW agents**

Program Description

The Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD) will provide the first real-time, on-the-move, chemical agent vapor detection for contamination avoidance or reconnaissance operations. It is capable of providing up to 360 degrees, on-the-move, vapor detection from a variety of tactical and reconnaissance platforms at distances up to 5 kilometers. The JSLSCAD is a second-generation chemical agent vapor detector which improves on the capabilities of the M21 Remote Sensing Chemical Agent Alarm (RSCAAL). When avoidance is not possible, JSLSCAD will provide extra time for warfighters to don full protective equipment gear (i.e., Mission Oriented Protective Posture (MOPP)).

FY04 Accomplishments

- Supported Stryker Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV) Production Qualification Test and Limited User Test (LUT).
- Selected and procured Increment 2 candidate remote sensing detectors and support equipment for testing (six detectors at $387K each from vendor one; six detectors at $300K each from vendor two; and six detectors at $448K each from vendor three, for a total of 18 detectors).
- Conducted testing of JSLSCAD detectors to support National Research Council (NRC) findings.
- Initiated Modeling and Simulation (M&S) efforts to allow evaluation of standoff detectors under various challenge environments.

Contractors

General Dynamics
Charlotte, NC

FY05 Objectives

- Continue Increment 1 evaluation to support NRC findings (M&S) and initiate Increment 2.
- Initiate evaluation of candidate commercial remote detection systems (Increment 2).
- Support remote sensing test facility design and use for testing of commercial detectors.
- Continue to provide Government systems engineering support.

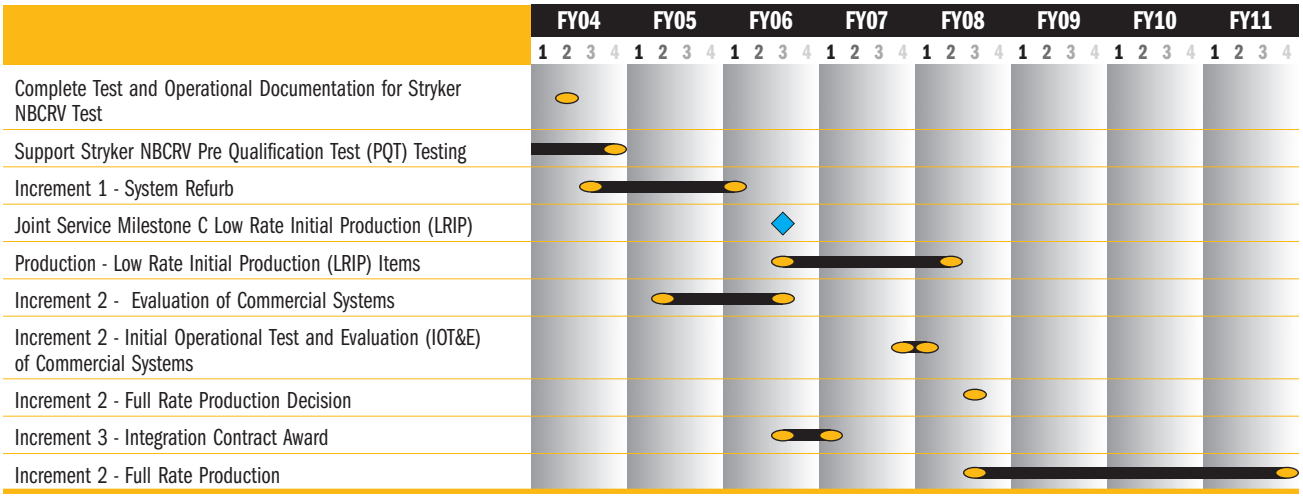
FY06 Objectives

- Continue evaluation of commercial remote detection systems and down-select to a single system (Increment 2).
- Initiate and plan for operational test and evaluation of selected commercial system.
- Continue testing and analysis to support NRC findings and refine modeling techniques.
- Continue integration and support of the commercial remote detection system onto various platforms.
- Initiate Increment 3 technology assessment.
- Initiate product improvement program for Increment 1 detection software.
- Continue to provide government systems engineering support.
- (T&E Capability) Initiate data gathering efforts from various battle-space representative environments to include correlating and archiving spectral background signatures from these environments.
- (T&E Capability) Coordinate/facilitate subject matter expert support.
- (T&E Capability) Initiate purchase of data collection instrumentation.

FY07 Objectives

- Support remote sensing test facility design and use for testing of commercial detectors.
- Complete follow-on testing and evaluation of selected commercial remote detection system (Increment 2).
- Conduct Milestone C/LRIP IPR (Increment 2).
- Continue planning for operational test and evaluation of selected Increment 2 system.
- Award contract for LRIP Increment 2 systems.

ACQUISITION PHASE



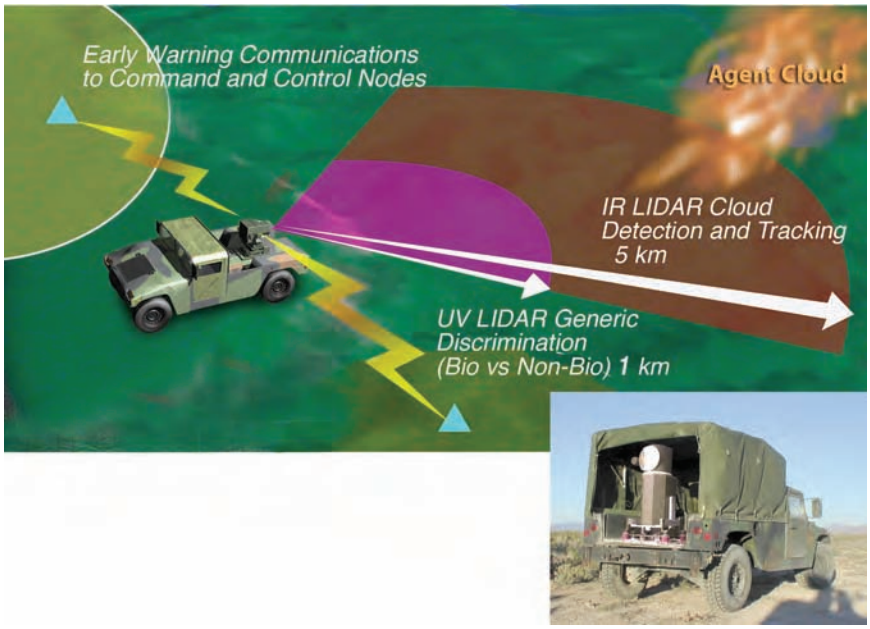
Joint Biological Standoff Detector System (JBSDS)

- **An integrated, stand-off system capable of providing near real-time BW detection**
- **Provides early warning to commanders supporting timely decision-making**
- **Detect and track aerosol clouds out to 5 km**
- **Discriminate biological from non-biological particles in aerosol clouds out to 1 km**
- **Operate at fixed site or in stationary mode from mobile platform**
- **Operationally skin and eye safe**

Program Description

The JBSDS is the first Joint Biological Standoff Detection Program. The JBSDS will be a standoff early warning Biological Detection (BD) system. The system will be capable of providing near real-time detection of biological attacks/incidents and standoff early warning detection/warning of Biological Warfare (BW) agents at fixed sites or when mounted on multiple platforms, including NBC reconnaissance platforms. It will be capable of providing standoff detection, ranging, tracking, discrimination (manmade vs. naturally occurring aerosol) and generic detection (biological vs. non-biological) of large area BW aerosol clouds for advanced warning, reporting, and protection.

JBSDS will augment and integrate with existing biological detection systems to provide a biological detection network capable of detection and warning to limit the effects of biological agent hazards against U.S. forces at the tactical and operational levels of war. JBSDS will have the flexibility to warn automatically or to allow for human intervention in the detection-to-alarm process. JBSDS will pass detection information and warnings through existing and planned communications networks. Commanders may integrate JBSDS outputs with information from intelligence, meteorological and oceanographic, radar, medical surveillance, local area operations, and other available assets to increase force protection, mitigate the consequence of biological hazards, and maximize combat effectiveness.



Contractors

Science & Engineering Services Inc.
COLUMBIA, MD

FY04 Accomplishments

- Completed development contract award.
- Completed Production Qualification Test (PQT) and analysis.
- Initiated background test, planning and analysis at multiple locations to refine detection/discrimination algorithm.
- Completed Milestone B and Milestone C activities.
- Initiated and completed the prototype upgrade and Engineering Design Test (EDT) planning.
- Initiated development of Increment II JBSDS system. This includes modeling and simulation analysis and market research.

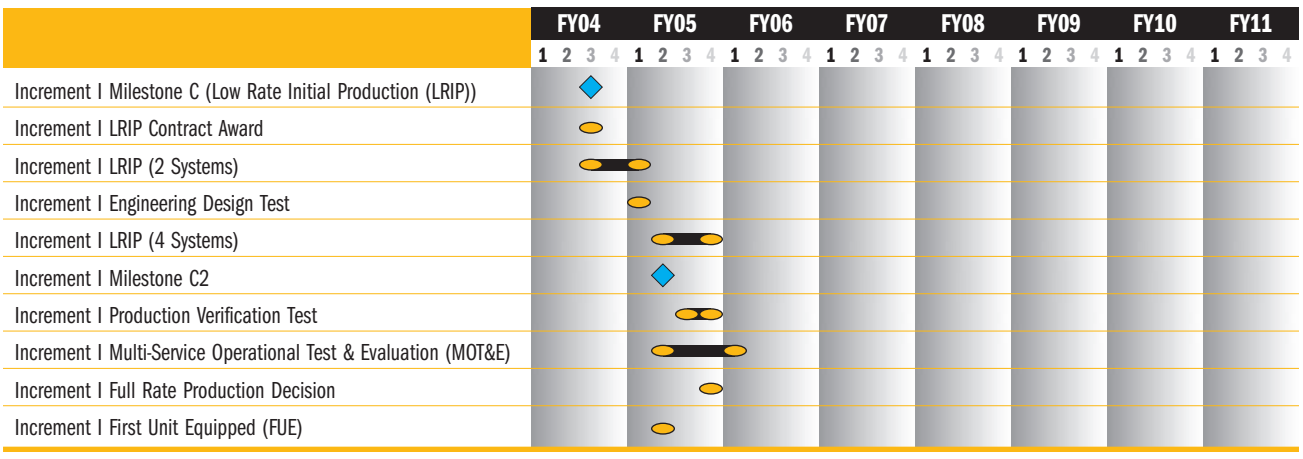
FY05 Objectives

- Complete development contract (including contractor support of Production Verification Test (PVT) and Initial Operational Test and Evaluation (IOT&E)).
- Conduct PVT.
- Conduct Multi-Service Operational Test and Evaluation (MOT&E).
- Initiate Modeling and Simulation for JBSDS Increment II.
- Initiate demonstration of Increment II technologies.

FY07 Objectives

- Develop real-time Man-in-Simulant Test (MIST) sampling system.

Acquisition Phase



SENTINEL

Joint Biological Point Detection System (JBPDS)

- **Evolutionary acquisition approach to replace the Interim Biological Agent Detection System (IBADS) and Biological Integrated Detection System (BIDS)**
- **Modular biological point detection suite integrated onto Service platforms**
- **Shelter, shipboard, and portable trailer variants**
- **Point detection capability for all Services**
- **Increased reliability and maintainability**
- **Identify 10 Biological Warfare (BW) agents simultaneously**

Program Description

The Joint Biological Point Detection System (JBPDS) Acquisition Category II (ACAT II) Sentinel program is the successor to the Army BIDS, Navy IBADS, and Air Force service-specific development programs. The JBPDS will meet Service requirements as outlined in the Joint Operational Requirements Document (JORD) and consist of complementary trigger, sampler, detector and identifier technologies to rapidly and automatically detect and identify biological threat agents. The suite will be capable of identifying BW agents in less than 15 minutes. The suite will be capable of identifying, as a minimum, BW agents listed in Category A of the International Task Force (ITF) 6 Report, dated February 1990. The suite will be integrated into each Service's platform (e.g., BIDS, surface ships, JSLNBCRS, and NBCRV) or installed on air bases and ports to provide a common detection and identification capability for joint interoperability and supportability. The JBPDS will increase the number of BW agents that can be identified by the BIDS and the IBADS; decrease detection and identification time; increase detection sensitivity; provide automated knowledge-based detection and identification; and provide a first-time point detection capability to the Air Force and Marine Corps.

FY04 Accomplishments

- Completed advanced Biological Aerosol Warning System (BAWS) upgrade for Low Rate Initial Production (LRIP) systems to meet JORD objective requirements for detection.
- Completed Multi-Service Operational Test and Evaluation (MOT&E) for the Army, Navy, and Air Force (Phases II–V). Provided final System Evaluation Report (SER).
- Priority fielding to Services. Initiated procurement of 98 XM97 Sheltered Vehicle configured JBPDS, and 2 XM98 Ship configured JBPDS, 6 XM96 Portable configured JBPDS, and 5 XM102 trailer configured JBPDS for a total of 111 systems.

Contractors

General Dynamics
Charlotte, NC

MIT
Boston, MA

Texas A&M
College Station, TX

FY05 Objectives

- Initiate, select, and validate spiral improvements for the JBPDS Line Replaceable Units (LRUs) to meet objective requirement for number of BW agents and sensitivity.
- Purchase JBPDS test hardware, Man-Portable XM 96 systems (five @ $503K ea.), and one System Support Package ($295K) for Whole System Live Agent Test (WSLAT) support.
- Adapt the Array Biological Sensor as an upgrade to the JBPDS.
- Priority fielding to Services with continuing procurement of 121 XM97 Sheltered Vehicle configured JBPDS, and 11 XM98 Ship configured JBPDS, and 1 XM102 Trailer configured JBPDS for a total of 133 systems.

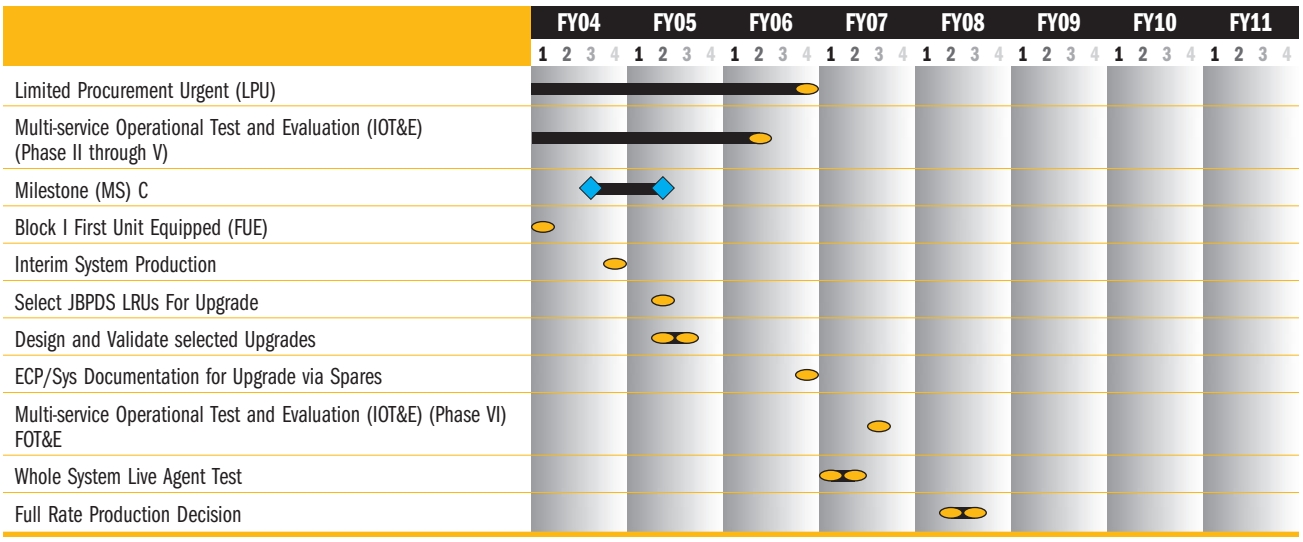
FY06 Objectives

- Initiate, select, and validate improved collector.
- Initiate, develop, and validate embedded training.
- Purchase one JBPDS System Support Package ($350K), for support to WSLAT. Support WSLAT execution.
- (T&E Capability) - Prepare preliminary chamber design. Initiate designs and prepare statements of work and deliverables for contractors. Provide chamber and fixtures, specify instrumentation and control systems.
- Priority fielding to Services with continuing procurement of 101 XM97 Sheltered Vehicle configured JBPDS, and 11 XM98 Ship configured JBPDS for a total of 112 systems.

FY07 Objectives

- (T&E Capability) - Finalize designs and prepare statements of work and deliverables for contractors. Provide chamber and fixtures, specify instrumentation and control systems.
- Priority fielding to Services with continuing procurement of 100 XM97 Sheltered Vehicle configured JBPDS, and 11 XM98 Ship configured JBPDS for a total of 111 systems.

Acquisition Phase



Automatic Chemical Agent Detector and Alarm (ACADA)

- **Man-portable Automatic Chemical Alarm Non-Developmental Item (NDI) solution to Joint Service Requirements**
- **Shipboard variant for operation under specific shipboard environment test**
- **Automatic detection and identification of all classes of nerve and blister agents**
- **Replaces M8A1 alarm**

Program Description

The M22 (ACADA) is an automatic chemical agent alarm system capable of detecting, warning and identifying standard blister and nerve agents simultaneously. The M22 is man-portable, operates independently after system start-up, provides an audible and visual alarm, and provides communication interface to support battlefield automation systems. Improvements over the M8A1 include: increase in sensitivity, decrease in responsiveness to interferents, able to operate in a collective protection environment, and able to operate on and in vehicles.

Contractors

Science & Technology Research Inc.
FREDERICKSBURG, VA

Smith's Detection
WATFORD, UK

FY04 Accomplishments

Procurement Activities:

M22 ACADA Hardware	National Guard	1,553
M22 ACADA Hardware	JPM Guardian	120
M22 ACADA 24/7 Variant for CBIFPP	Homeland Security	263
M22 ACADA Hardware	WMD-CST	147
M22 ACADA Hardware	USAF	1,475
	TOTAL	3,558

FY05 Objectives

Procurement Activities:

M22 ACADA Hardware	U.S. Army	4,234
M22 ACADA Hardware	National Guard	1037
M22 ACADA Hardware	SOC	525
M22 ACADA 24/7 Variant for CBIFPP	Homeland Security	47
M22 ACADA Hardware	JPM Guardian	32
	TOTAL	5,875

FY06 Objectives

Procurement Activities:

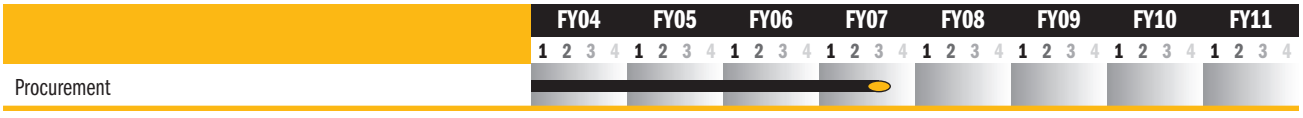
M22 ACADA Hardware	U.S. Army	266
M22 ACADA Hardware	SOC	382
M22 ACADA Hardware	JPM Guardian	32
	TOTAL	680

FY07 Objectives

Procurement Activities:

M22 ACADA Hardware	U.S. Army	1,045
	TOTAL	1,045

Acquisition Phase



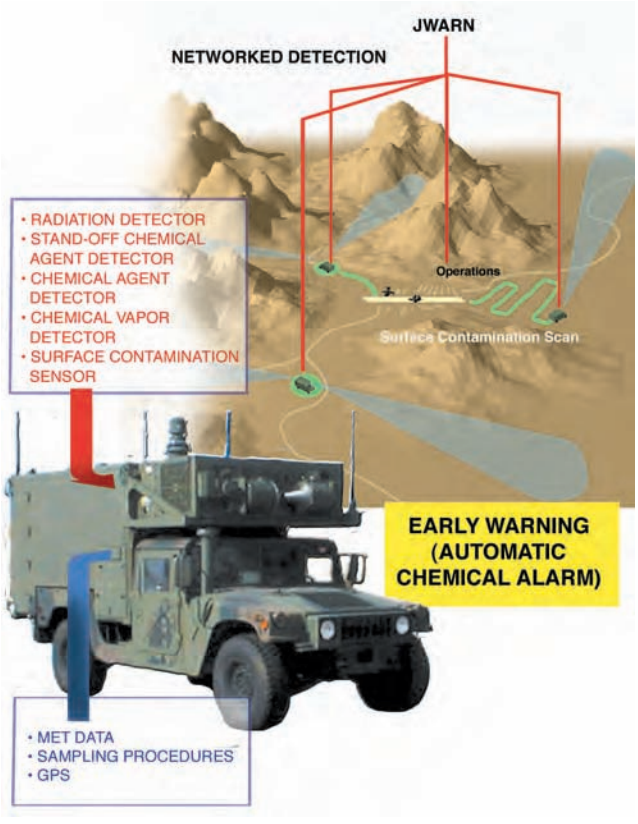
SENTINEL

Joint Service Light Nuclear Biological Chemical Reconnaissance System (JSLNBCRS)

- **Complete and integrated suite with communications and collective protection capabilities**
- **Stand-off (Chemical) and point detection (Chem/Bio)**
- **Contamination area marking capability**
- **Automated NBC hazard prediction, analysis and dissemination**
- **Transportability: High Mobility Multi-purpose Wheeled Vehicle (HMMWV) variant (CH-47); HMMWV and LAV variant (CH-53E) and (MV-22) Organic platform (HMMWV)**
- **Advanced NBC detection**
- **Automated hazard detection, reporting, and mapping capability via GPS and MET**

Program Description

The JSLNBCRS is an NBC detection and identification system. The major segments are the Base Vehicle, Command and Control, and NBC Equipment Suite. The base vehicle segment consists of the vehicle, life support subsystem, and power supply subsystems. The NBC equipment suite performs the vital functions of detecting, identifying, collecting, and marking NBC hazards and toxic industrial chemicals. These functions have been divided into ten areas that include; radiation detection, biological agent detection and identification, chemical vapor detection and identification, standoff chemical agent detection and identification, surface chemical agent detection and identification, surface contamination sampling, sample collection and retention, handheld chemical agent detection and identification, area marking, and meteorological data collection. The command and control segment consists of the navigation, internal and external communications interface control, and the central data processing unit. The vehicle will be equipped with collective protection; an overpressure system, environmental control system and an auxiliary power supply system. There are two variants of the JSLNBCRS: the M1113 HMMWV variant and the LAV (Gen II) variant.



Contractors

AM General
Lavonia, MI

Northrop Grumman
Sierra Vista, AZ

General Dynamics
Ontario, Canada

Oak Ridge National Laboratory
Oak Ridge, TN

FY04 Accomplishments

- Completed Light Armored Variant (LAV) integration. Initiated the preparation for LAV #1 Engineering Design Test (EDT). Completed Nuclear, Biological, Chemical Detection, Analysis, and Communication Software (NBCDACS) upgrades.
- Initiated Toxic Industrial Chemical (TIC) and Toxic Industrial Material (TIM) software upgrade for CBMS II transition to JSLNBCRS procurement. Initiated improvements to biological detection/identification capability.
- Initiated Multi-service Operational Test and Evaluation (MOT&E) planning/coordination.
- Provided government systems engineering support.

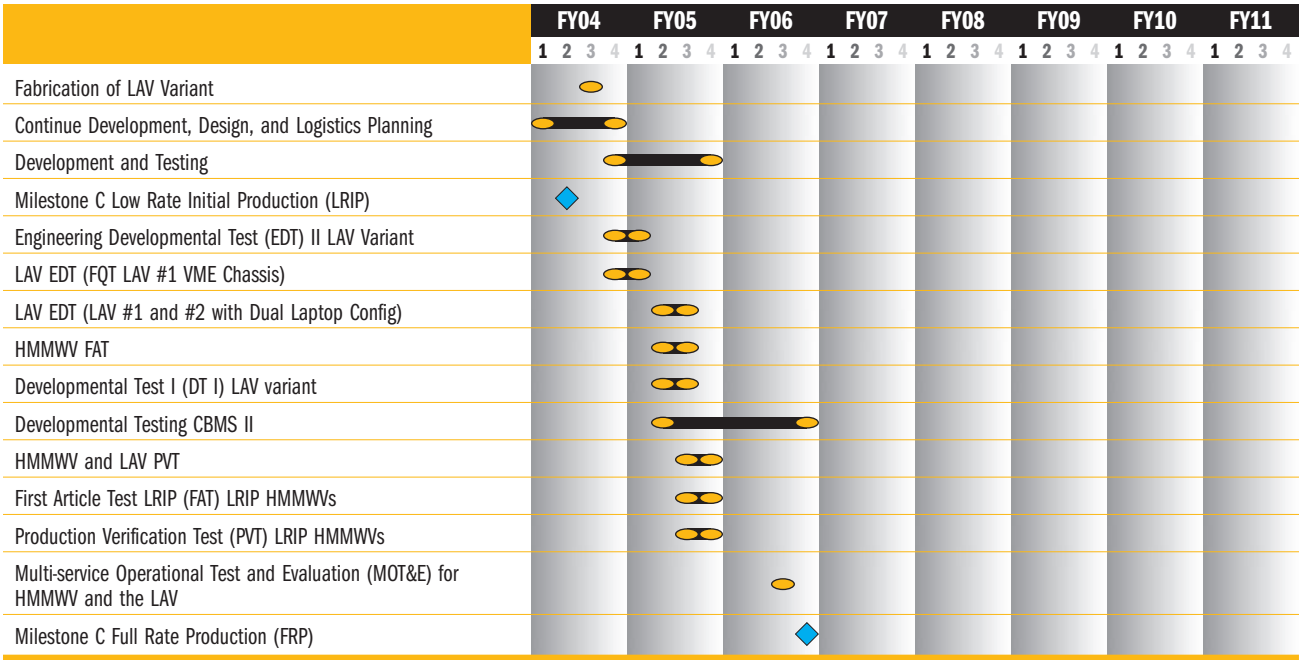
FY05 Objectives

- Continue TICs and TIMs software upgrades for CBMS II transition to JSLNBCRS procurement. Continued improvements to biological detection/identification capability.
- Initiate Integrated Logistics Support (ILS) of CBMS II.
- Continue MOT&E planning and preparation.
- Continue LAV Developmental Test (DT) of sensors and regression testing.
- Complete LAV integration and conduct contractor Engineering Design Test (EDT).
- Complete integration of initial M1113 HMMWV LRIP build (6 vehicles).
- Initiate First Article Test (FAT)/Production Verification Test (PVT) of HMMWV LRIP.
- Provide government systems engineering support.

FY06 Objectives

- Complete development and validation of biological detection capability for CBMS II.
- Initiate additional chemical/Toxic Industrial Chemical (TIC) library for CBMS II.
- Complete CBMS II software technical transfer and Integrated Logistics Support (ILS).
- Initiate and complete MOT&E.
- MS C Full Rate Decision IPR.
- Provide government systems engineering support.

Acquisition Phase



Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV)

- **Added biological detection**
- **Improved nuclear and chemical detection**
- **On-the-move stand-off chemical vapor detection**
- **On-the-move meteorological sensor**
- **Improved digital integration with situational awareness software**

Program Description

The NBCRV is a dedicated system of nuclear and chemical detection and warning equipment, and biological sampling equipment. These are integrated into a high speed, high mobility, armored carrier capable of performing NBC reconnaissance on primary, secondary, or cross country routes throughout the battlefield. The NBCRV will have the capability to detect and collect chemical and biological contamination in its immediate environment, on-the-move, conduct point detection via the Chemical Biological Mass Spectrometer (CBMS) and Joint Biological Point Detection System (JBPDS), and through the use of the Joint Service Lightweight Stand-off Chemical Agent Detector (JSLSCAD) conduct standoff detection operations at a distance. It automatically integrates contamination information from detectors with input from on-board navigation and meteorological systems and automatically transmits digital NBC warning messages through the Maneuver Control System (MCS) to warn follow-on forces.

Contractors

Battelle
Aberdeen, MD

CACI
Manassas, VA

Hamilton Sundstrand Sensor Systems
Pomona, CA

General Dynamics Land System
Detroit, MI

FY04 Accomplishments

- Initiated and completed software and hardware upgrades. Hardware upgrades included upgrade of the sensor processing group, and development of a laptop based computer. Software upgrades corrected deficiencies identified during Production Qualification Test (PQT) and Limited User Test (LUT).
- Initiated and completed PQT re-testing to support a Low Rate Initial Production (LRIP) Interim Progress Review (IPR).

FY05 Objectives

- Award contracts for purchase of sensor suite components.
- Complete Technical Manual (TM) and training package materials for sensor components.
- Initiate delivery of components to the Stryker Prime Contractor, General Dynamics Land System (GDLS), for integration into the Stryker NBCRV.

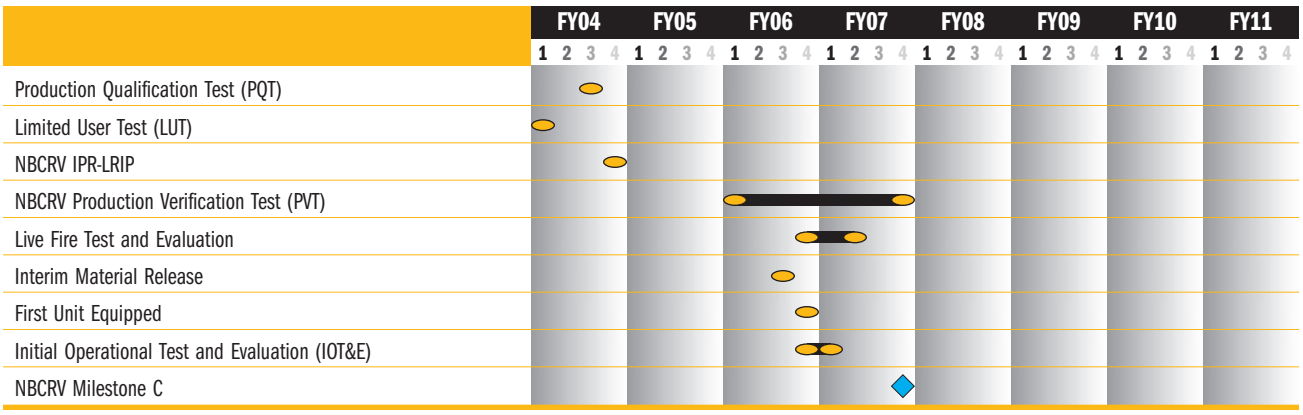
FY06 Objectives

- Complete hardware delivery to GDLS.
- Initiate Product Verification Test (PVT) and Initial Operational Test and Evaluation (IOT&E).
- Conduct Live Fire testing.

FY07 Objectives

- Complete PVT and IOT&E.
- Complete Milestone C.

Acquisition Phase



Joint Biological Agent Identification and Diagnostic System (JBAIDS)

- **Single DoD accepted platform for both identification and diagnostic confirmation of biological agents**
- **Operation in fixed medical laboratories and deployed medical units**
- **Operates as a stand-alone system; future development increments to be interoperable with Theater Medical Information Program (TMIP)**
- **Provides simultaneous identification of multiple biological agents**
- **Rapid identification—within 40 minutes of sample preparation**
- **Food & Drug Administration (FDA) clearance will allow medical professionals to make immediate diagnostic confirmation of infection without waiting 24 to 48 hours for culture using current accepted methods**

Program Description

The Joint Biological Agent Identification and Diagnostic System (JBAIDS) is an integrated system for rapid identification and diagnostic confirmation of biological agent exposure or infection. Based on commercial technology, JBAIDS is man-portable, reusable, and will be capable of the simultaneous identification of multiple Biological Warfare Agents (BWA) and other pathogens of operational concern. The system consists of the hardware platform to perform sample analysis, a laptop computer for readout display, and assay reagent test kits.

FY04 Accomplishments

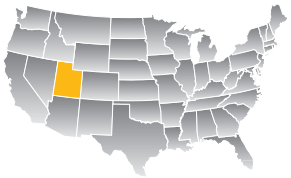
- Continued Developmental Testing (DT).
- Developed hardware and assays; delivered test articles; conducted hardware qualification testing; and continued hardware Engineering Change Proposal (ECP) process; initiated hardware upgrading and Biological Warfare (BW) assay development.
- Completed Operational Assessment (OA).

FY05 Objectives

- Complete Block I DT, hardware ECP process and upgrading, and BW assay development. Achieve Milestone C/Low Rate Initial Production (LRIP) decision.
- Initiate and complete multi-service Operational Test and Evaluation (OT&E).
- Develop contract ECPs.
- Conduct New Equipment Training (NET) of systems.
- Conduct FDA clinical trials and submit FDA 510(k) for Anthrax.

Contractors

Idaho Technology Inc.
Salt Lake City, UT



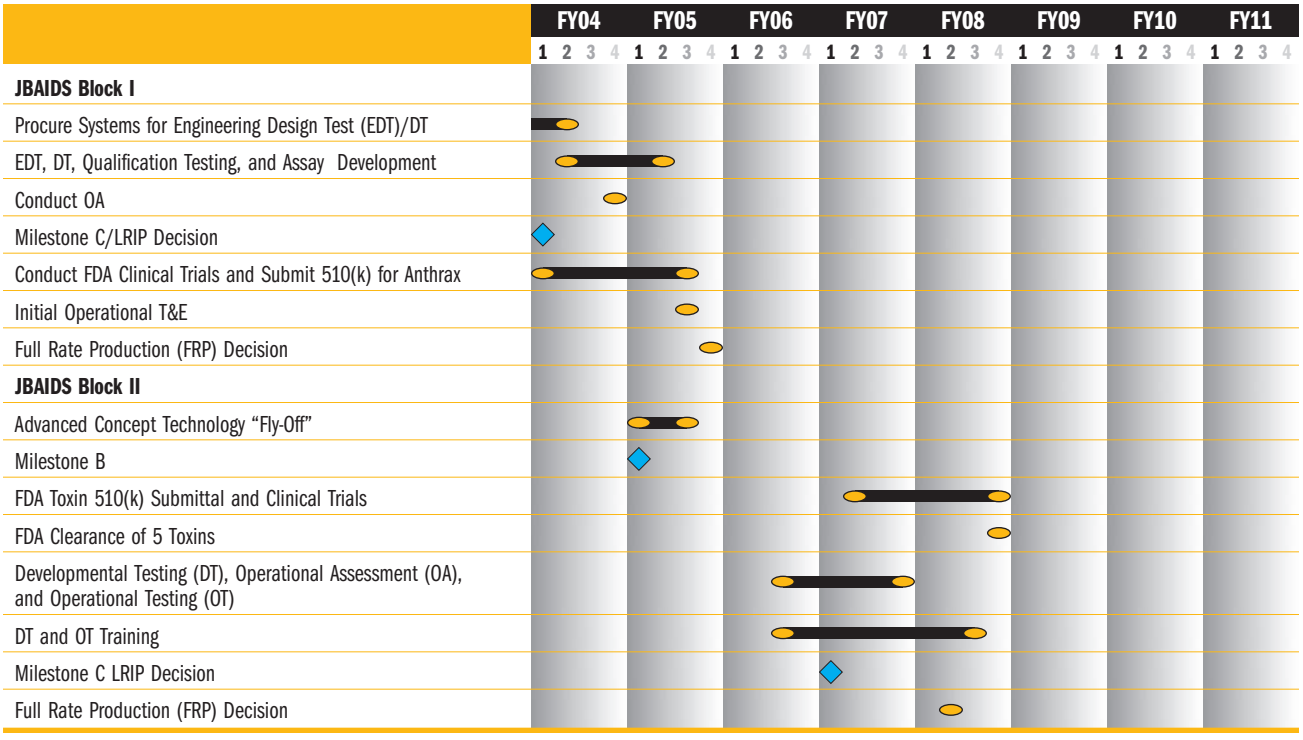
FY06 Objectives

- Initiate Block II DT, OA, and Operational Testing (OT).
- Initiate Government Furnished Material (GFM) manufacturing support of toxin test sample manufacturing.
- Initiate and complete toxin Food and Drug Administration (FDA) interface planning efforts to determine pre-marketing approval (PMA)/510(k) applicability.
- Initiate system DT training efforts.

FY07 Objectives

- Complete Block II DT, OA, and OT.
- Provide developmental contract incremental funding to support developmental and operational testing, technical manual development, contractor logistics support, FDA 510(k) activities, and test plans/procedures.
- Continue GFM manufacturing support of toxin test sample manufacturing.
- Continue DT system training efforts.

Acquisition Phase



SENTINEL

Joint Warning and Reporting Network (JWARN)

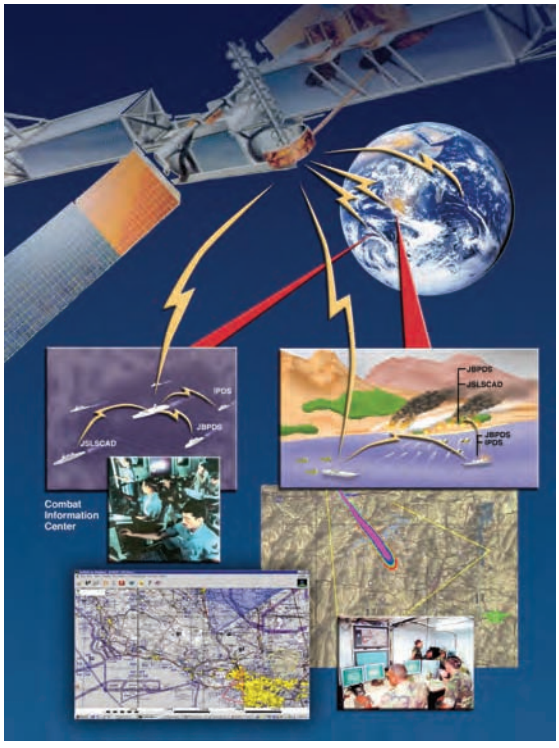
- **Two-way interface with current and planned individual Service Command, Control, Communication, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) hardware and software**
- **Provides overlays of hazardous areas**
- **Block I—initial acquisition and fielding of Commercial off-the-shelf (COTS) and Government off-the-shelf (GOTS) software as standard for Armed Services**
- **Block II—integration of NBC legacy and future detector modules, and NBC Battlefield Management modules**
- **Rapidly predict downwind hazardous areas**
- **Reside on mobile/fixed platforms**
- **Built-in communication module**
- **Compatible with Allied Technological Publication (ATP)-45**

Program Description

JWARN will provide Joint Forces with a comprehensive analysis and response capability to minimize the effects of hostile NBC attacks or accidents/incidents. It will provide the operational capability to employ NBC warning technology which will collect, analyze, identify, locate, report and disseminate NBC warnings. JWARN will be compatible and integrated with Joint Services C4ISR systems. JWARN will be located in Command and Control Centers at the appropriate level and employed by NBC defense specialists and other designated personnel. JWARN will transfer data automatically from and to the actual detectors/sensors and provide commanders with analyzed data for decisions for disseminating warnings down to the lowest level on the battlefield. JWARN will provide additional data processing, production of plans and reports, and access to specific NBC information to improve the efficiency of limited NBC personnel assets.

FY04 Accomplishments

- Conducted Program Management and Oversight of JWARN and JWARN Initial Capability (JIC) development efforts.
- Continued JIC Component Development.
- Planned for and initiated JWARN Developmental Test/Operational Assessment (DT/OA).
- Provided integration support for JWARN with Joint Effects Model (JEM) and Joint Operational Effects Federation (JOEF).
- Integrated JIC with C4I Systems.
- Supported Mission Application Software Integration.
- Planned for Operational Assessment.
- Developed JWARN Communications Interface Device (JCID).



Contractors

Bruhn-Newtech
COLUMBIA, MD

Northrop Grumman
WINTERPARK, FL

FY05 Objectives

- Continue Block II DT/OA planning.

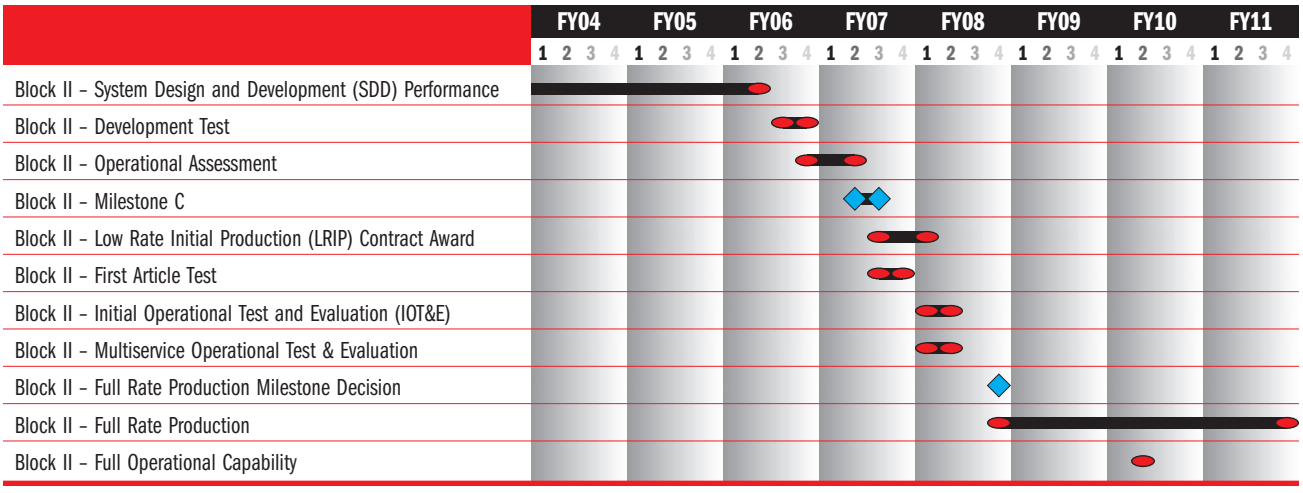
FY06 Objectives

- Complete Block II development.
- Conduct Block II Developmental Test (DT).
- Conduct Block II Interoperability Tests (IOT).
- Conduct Joint Component Interface Device (JCID) tests.
- Develop comprehensive DT test results and reports.
- Conduct Multi-Service Operational Test & Evaluation (MOT&E) event planning.
- Joint Component Interface Device (JCID) functionality - design and integration.
- Stand alone variant development.
- Network Centric Enterprise Services (NCES)/Net Ready (NR)/Key Performance Parameters (KPP) enhancements.
- Develop, design and integrate software and hardware for a functional Operational Test (OT) Stimulator demonstration system.
- Develop a high bandwidth data transfer backbone to transmit and integrate test data for rapid analysis across multiple users and test sites.

FY07 Objectives

- Generate comprehensive Operational Assessment (OA) report.
- Conduct Block II OA.
- Conduct Milestone C review.
- Coordinate JCID Low Rate Initial Production (LRIP).
- Coordinate JCID First Article Test (FAT).
- Conduct MOT&E event planning.
- Test and validate software and hardware for the Operational Test (OT) Stimulator demonstration system.
- Integrate branched connections to the data transfer backbone to transmit and integrate test data for rapid analysis across multiple users and test sites.

Acquisition Phase



Joint Effects Model (JEM) and Joint Operational Effects Federation (JOEF)

- **Capable of modeling hazards in various scenarios including: counterforce, passive defense, accident and/or incidents, high altitude releases, urban NBC environments, building interiors and human performance degradation**
- **Resides on and interfaces with C4I systems. C4I systems will use JEM to predict hazard areas and provide warning to U.S. forces within those areas**
- **JOEF will provide a computer based software system capable of providing Modeling and Simulation (M&S) and analysis supporting the development of CBRN operation requirements and near real time decision-making in a combat environment**

Program Description

JEM will provide a single, validated capability to predict and track Nuclear, Biological, Chemical (NBC) and Toxic Industrial Chemical/Material (TIC/TIM) events and effects.

JOEF is a joint service program endorsed by the DoD that provides an operational requirements modeling and simulation system to enable warfighters and war planners to accurately predict chemical/biological environment effects on personnel, equipment and operations. JOEF provides both a near-term requirement for advance planning and analysis and far-term requirement for near real-time decision-making capabilities.

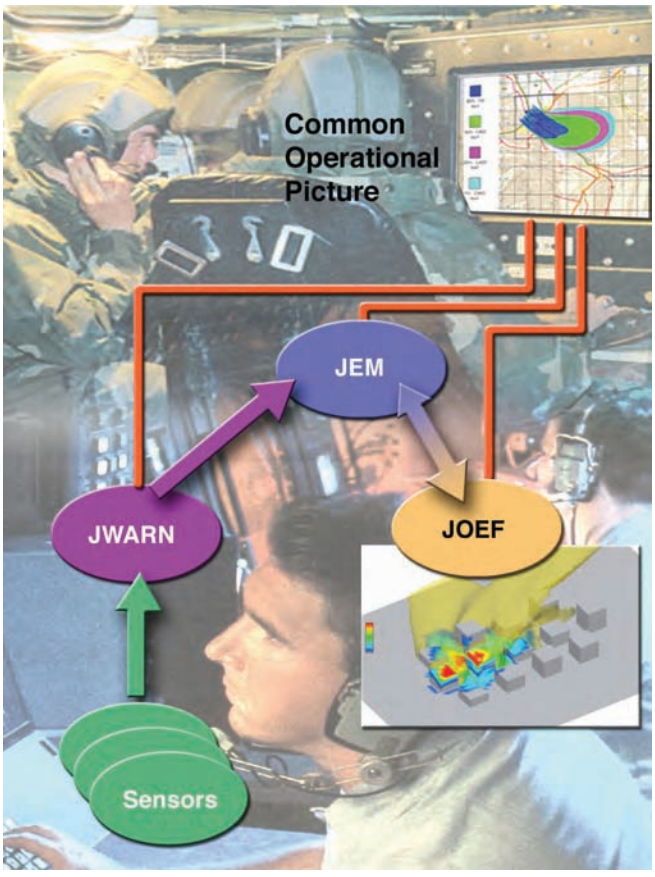
FY04 Accomplishments

JEM BLOCK I

- Conducted milestone (MS) B.
- Finalized service command and control system integration plans, and initiated integration activities with Service Global Command and Control System (GCCS) variants and other Command and Control (C2) systems.
- Performed Independent Validation & Verification (IV&V) activities during software development.

JOEF BLOCK I

- Transitioned from Advanced Technology Development (ATD) and developed JOEF prototype.



Contractors

JEM
SPAWAR Systems Center
San Diego, CA

JOEF
Cubic Applications Inc.
Lacy, WA

SPAWAR Systems Center
San Diego, CA

FY05 Objectives

JEM BLOCK I

- Continue IV&V, finalize Operational Test (OT) plans and initiate OT, and initiate establishment of Software Support Activity (SSA).

JOEF BLOCK I

- Continue IV&V, finalize Operational Test (OT) plans and initiate OT, initiate establishment of Software Support Activity (SSA), conduct MS B and award System Development and Demonstration (SDD) contract.

FY06 Objectives

JEM BLOCK I AND BLOCK II

- Perform software maintenance through Initial Operational Capability (IOC), initiate long-term field trials, and conduct MS C.
- Revalidate Block II technology analysis, develop prototype options and prepare for MS B, initiate and complete Block II system development and demonstration, and initiate IV&V.

JOEF BLOCK I

- Perform Sea Ports of Debarkation (SPOD), Aerial Ports of Debarkation (APOD), and automated Tactics, Techniques, & Procedures (TTP) software development, initiate the development of mobile force capability to meet the Services' requirements, develop Test, Validation and Verification plans, start Developmental Testing (DT) and begin software validation and verification.

FY07 Objectives

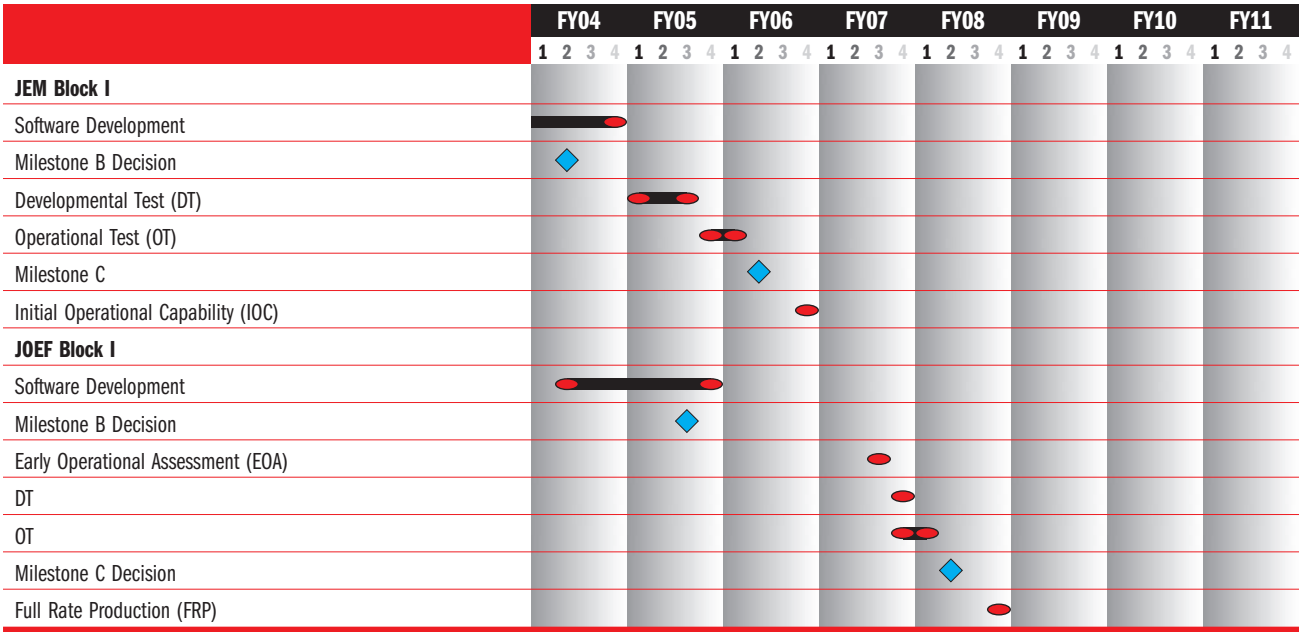
JEM

- Provide for software upgrades after initial system fielding, and continue initial system training.

JOEF BLOCK I

- Complete software development for APODs, SPODs, automated TTPs and Mobile Force requirements for the Services for strategic level of war, complete DT, and initiate OT.

ACQUISITION PHASE



Protective Clothing: Joint Service Lightweight Integrated Suit Technology (JSLIST)

- **Protective Suits—Overgarments (OG)**
- **Multipurpose Overboots (MULO) and Alternative Footwear Solutions (AFS)**
- **Protective Gloves (in development)**
- **Improved chemical protection (to 45 days)**
- **Reduced heat stress**
- **Split issue—improved fit**
- **Full compatibility with all interfacing equipment**

Program Description

The JSLIST chemical and biological protective garment is made of an outer shell that is 50% nylon and 50% cotton poplin ripstop material with a durable water repellent finish. The liner consists of a non-woven front, laminated to activated carbon spheres and bonded to a tricot knit back that absorbs chemical agents. The garment is two-piece (coat and trousers).

The JSLIST ensemble employs a single base garment design but will be configured to meet each Services requirements. The ensemble consists of four components: protective suit, protective overboots, protective gloves, and multipurpose protective socks.

1. **Chemical Protective Overgarment (OG).** A two-piece garment consisting of trousers and coat with an integrated hood. Provides liquid, vapor, and aerosol protection. Variants may include an Advanced Battledress overgarment (45 day suit), a lightweight CB protective overgarment (7 day suit), or a vapor protective undergarment.
2. **Multipurpose Rain/Snow/Chemical/Biological Overboots (MULO).** Designed to be worn with standard-issue combat boot or jungle boot while also serving as environmental footwear. Provides maximum foot protection in a CB environment. Resists Petroleum, Oil, and Lubricants (POL) and is flame resistant. Validating the Commercial off-the-shelf (COTS) products for a JSLIST Alternative Footwear System/Integrated Footwear System (AFS/IFS) to replace the MULO. The AFS will be a lightweight overboot for use by ground and shipboard forces while the IFS will be a sock or insert for use by Aviation, Combat Vehicle Crew and Special Mission personnel.
3. **JSLIST Block II Glove Upgrade (JB2GU).** Provides protection against liquid, vapor, and aerosol CB agents. Will provide enhanced human factors for both aviation and ground chemical ensembles. Additionally, a glove for aviators will be flame resistant.
4. **Integrated Footwear System (IFS).** Designed to support Joint Services and Special Operations Command (SOCOM) requirements and provide foot protection from CB agents when worn inside footwear.

FY04 Accomplishments

Block II Glove Upgrade

- Initiated Developmental Testing (DT) and conducted preparations for MS C Full Rate Production (FRP).
- Formed project teams, conducted market surveys and prepared acquisition strategies.

JSLIST AFS

- Initiated DT and conducted preparations for MS C FRP.
- Formed project teams, conducted market surveys and prepared acquisition strategies.

JSLIST IFS

- Initiated DT and conducted preparations for MS C FRP.
- Formed project teams, conducted market surveys and prepared acquisition strategies.

JSLIST Production

- Procurement of 177,604 JSLIST ensemble overgarments, 400,000 MULO Overboots, 107,692 Block I Gloves, and 190,476 Block I Gloves for SOCOM.

Contractors

NISH
Kentucky, Maine, Michigan, Texas

ACTON Inc.
Acton Vale, Quebec, Canada

Cloutier
Ottawa, Ontario, Canada

FY05 Objectives

Block II Glove Upgrade

- Complete chemical agent validation testing and complete Initial Operational Test and Evaluation (IOT&E).
- Complete preparations for MS C FRP.

JSLIST AFS

- Complete chemical agent validation testing and complete IOT&E.
- Complete preparations for MS C FRP.

JSLIST IFS

- Complete durability testing and complete IOT&E.

JSLIST Production

- Procurement of 284,745 JSLIST ensemble overgarments and 5,750 for SOCOM.

FY06 Objectives

JSLIST

- Initiate hierarchical requirement and affordability analysis. New materials with new designs present trade-offs in about every area of capability. This effort will weigh warfighter requirements in order to ensure that all material and design selections can be traced to the improvements in operational capability most in demand.
- Design a new protective suit to support Special Forces operational requirements. U.S. Special Operations Command and JSLIST Additional Source Qualification (JASQ) efforts.
- Conduct producability/reproducibility production base analysis. This effort includes all configuration management work and the work necessary to ensure that the design is producible (and reproducible with minimum variance) with new production methodologies.
- Initiate testing of design variations at the system level in aerosol and vapor system test laboratories with U.S. military personnel (only simulants are used).
- Conduct initial design field testing. This field testing will allow informed design selection decisions.

JSLIST Production

- Procurement of 122,644 JSLIST ensemble overgarments.

FY07 Objectives

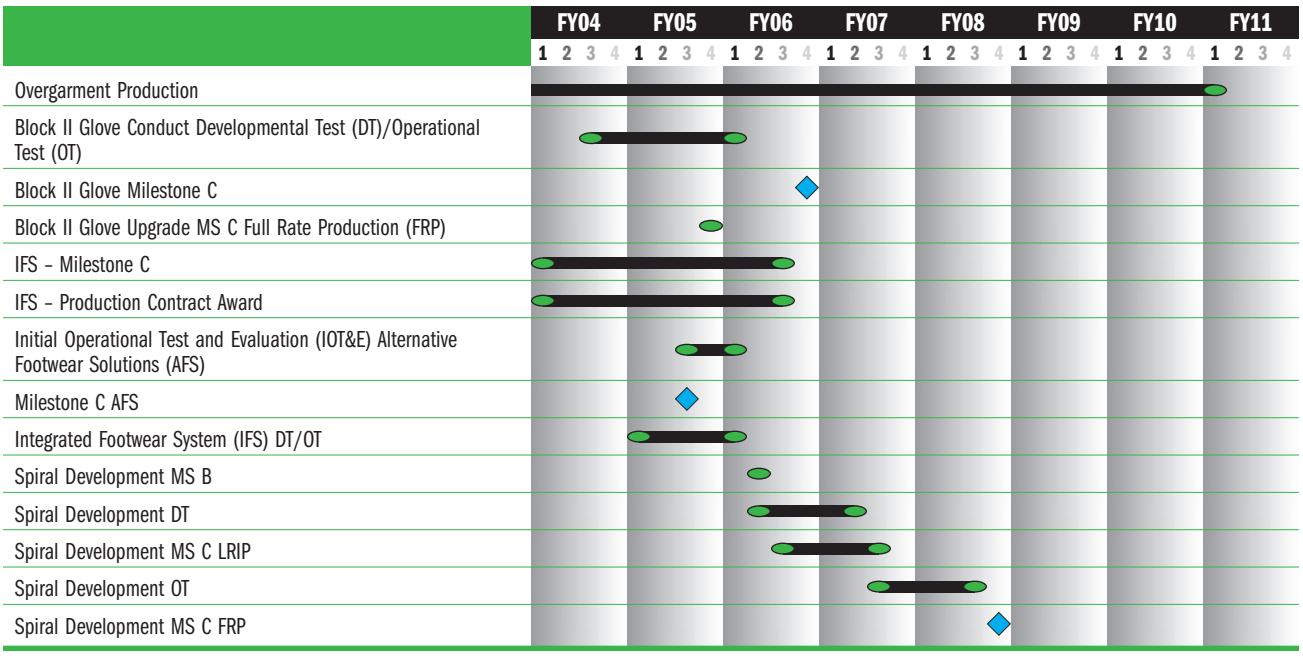
JSLIST

- Complete design field testing.
- Purchase production representative items necessary for all Operational Testing (OT).
- Conduct mission OT with service personnel performing specific job specialties while wearing production representative suits.
- (T&E Capability) – Develop a prototype instrumented mannequin for use in testing Individual Protective Equipment (IPE), including full ensembles, with live agents. Configure chamber for IPE simulant testing.

JSLIST Production

- Procurement of 93,995 JSLIST ensemble overgarments.

Acquisition Phase



Joint Service General Purpose Mask (JSGPM)

- **Lighter, less bulky than current masks**
- **Provides improved protection compared to existing masks**
- **Will replace the M40, M40A1, M42, M42A1, M42A2, MCU-2/P and MCU-2A/P masks and M45 masks in the Land Warrior program**
- **Program Goals:**
  - **50% bulk weight reduction**
  - **50% breathing resistance reduction**
  - **Improved comfort**
  - **Improved protection (includes toxic industrial material)**

Program Description

The JSGPM is a lightweight, protective mask system (consisting of mask, carrier and accessories) incorporating state of the art technology to protect U.S. forces from anticipated threats. The mask components are optimized to minimize impact on the wearer's performance and to maximize its ability to interface with future Service equipment and protective clothing. The mask provides the wearer with continuous above-the-neck protection and a drinking capability.

FY04 Accomplishments

- Continued System Demonstration. System Demonstration included system support packages for Production Qualification Testing (PQT) and Limited User Testing (LUT).
- Continued preparation of program/project documentation. Documentation included the Single Acquisition Management Plan (SAMP) and Performance Specifications.
- Continued Developmental and Operational Testing. Generated test incident reports and corrective action plans addressing test results during mask design and prototype production.

Contractors

AVON Protection Systems
CADILLAC, MI

Quick Protective Systems
STUART, FL

- Continued development of the Joint Service Chemical Environment Survivability Mask (JSCESM) as a lightweight complement to the JSGPM against limited threats.
- Conducted support for the development of the Improved Protective Mask (IPM) and completed MS C for IPM.

FY05 Objectives

- Complete System Demonstration. System Demonstration includes system support packages for PQT and Multi-service Operational Testing and Evaluation.
- Complete preparation of program/project documentation. Documentation includes the SAMP and performance specifications.
- Complete Development (PQT) and Operational (Limited User Team) Testing. Complete test and evaluation reports. Purchase 25,000 Low Rate Initial Production (LRIP) test articles for Multi-service Operational Test and Evaluation.
- Complete developmental Logistics Support Planning. This effort includes completion of manuals and finalization of supportability plans.
- Procure 6,832 Combat Vehicle Crewman (CVC) JSGPMs and 34,029 Ground /Ship JSGPMs.

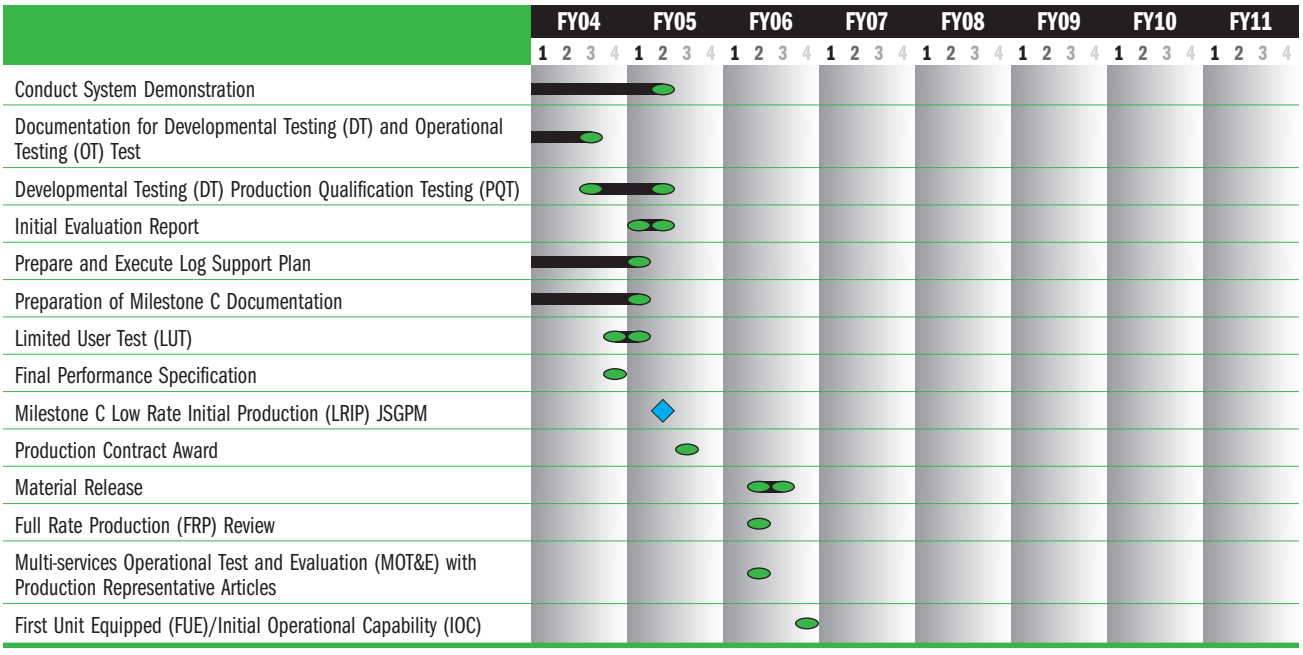
FY06 Objectives

- Perform Initial Operational Test and Evaluation (IOT&E)
- Procure 10,800 Combat Vehicle Crewman (CVC) JSGPMs; 109,200 Ground /Ship JSGPMs and 70,000 JSCESMs.

FY07 Objectives

- Procure 17,630 Combat Vehicle Crewman (CVC) JSGPMs; 178,370 Ground /Ship JSGPMs and 70,000 JSCESMs.

Acquisition Phase



Joint Service Aircrew Mask (JSAM)

- **Chemical and Biological (CB) protection system with positive pressure breathing capabilities**
- **All existing life-support compatible with equipment**
- **CB portion donned in-flight**
- **NATO compliant**
- **Increased CB protection**
- **Increased field of view**
- **Improved heat stress**
- **Lightweight**
- **For use in fixed and rotary wing aircraft**

Program Description

The Joint Service Aircrew Mask (JSAM) is an aircrew mask that provides head-eye-respiratory, CB, continuous protection in fixed and rotary wing aircraft. JSAM provides donning and doffing capability while in flight. When integrated with anti-G protection, it will provide CB and anti-G protection to aircrew in high performance aircraft. It will be compatible with existing CB ensembles, provide flame and thermal protection, and reduce heat stress imposed by existing CB protective masks. JSAM also incorporates positive breathing in high performance aircraft. JSAM is intended to replace 6 existing aircrew masks in the DoD inventory. The JSAM will be a lightweight, CB protective mask which can be worn as CB protection for all aircrews. It will provide flame and thermal protection and reduce heat stress imposed by existing CB protective masks.

FY04 Accomplishments

- Continued system design, engineering and fabrication activities of the two major JSAM variants (Type I – rotary wing and Type II – fixed wing), to include Helmet Mounted Display (HMD) units; developed production processes and planned for adequate tooling in preparation for fabrication of units.
- Continued contractor and government developmental test and evaluation and operational test planning activities, to include integration with selected aircraft.
- Continued program management, logistics and sustainment planning. Prepared program and technical documentation.

Contractors

AVOX
Lancaster, NY

FY05 Objectives

- Complete Contractor Developmental Testing (DT) for the JSAM rotary wing aircraft variant (Type I), to include the Apache variant (Type IA), and initiate Government DT.
- Complete material purchase, fabrication, and assembly of JSAM filters, as well as 121 JSAM Apache DT units (at an average unit cost of $2,141), and 185 JSAM Type I DT units (at an average unit cost of $1,858).
- Continue documentation and planning in preparation for JSAM Operational Testing (OT).
- Continue system design, engineering and fabrication activities for JSAM Type I and Type II variants, to include helmet mounted display variants; continue to develop production processes and ensure tooling and equipment are adequate to fabricate units.
- Continue contract and government program management, logistics and sustainment planning.

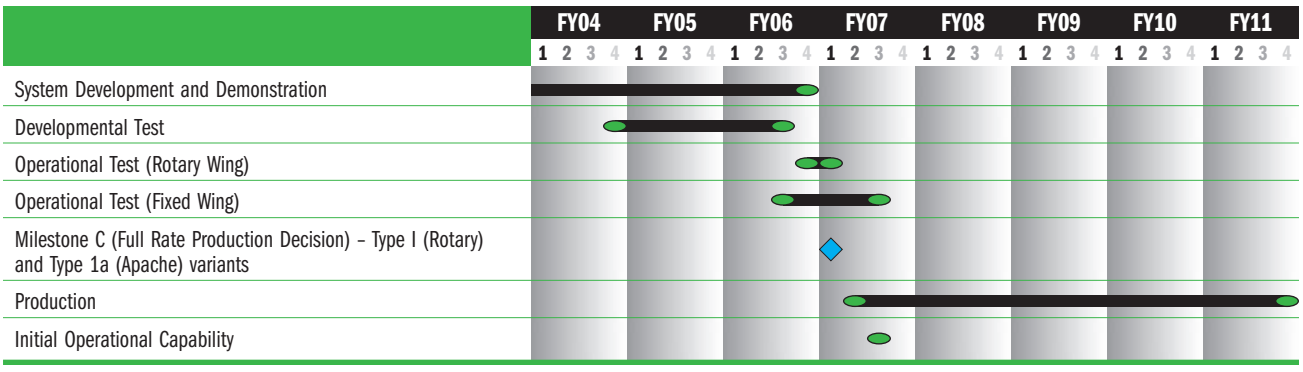
FY06 Objectives

- Complete Government DT and evaluation for the JSAM rotary wing aircraft variation (Type I), to include the Apache variant (Type IA). Initiate Government OT, utilizing Type I and Type IA JSAM DT assets. Continue Government DT and OT planning for fixed wing (Type II) HMD variants.
- Continue system design, engineering and fabrication activities on all required variants; continue to develop production processes and ensure tooling and equipment are adequate to fabricate production units.
- Continue contract and government program management, logistics and sustainment planning.
- Procurement of 550 JSAM Integrated Helmet and Display Sight System (IHADSS) systems.

FY07 Objectives

- Complete Government OT, utilizing Type I and Type IA JSAM assets. Initiate Government DT for 348 fixed wing (Type II at $4,090 average per unit cost), and 160 HMD variants (at $3,649 average per unit cost)
- Continue system design, engineering and fabrication activities on all required variants; continue to develop production processes and ensure tooling and equipment are adequate to fabricate production units.
- Continue contract and government program management, logistics and sustainment planning.
- Procurement of 1,149 JSAM (IHADSS) and 2,550 JSAM Type 1 Variant systems.

Acquisition Phase



Joint Protective Aircrew Ensemble (JPACE)

- **Provides an improved Chemical Biological (CB) ensemble for use by all personnel who serve as crew members on rotary and fixed wing aircraft**
- **Below-the-neck CB protection for 16 hours (24 hour objective)**
- **Resist ignition and self extinguish if ignited**
- **Thermal protection for emergency egress from burning aircraft**
- **System will increase wear time enabling missions of longer duration to be performed**

Program Description

JPACE is an improved protective ensemble for aircrews to replace the Navy Mk1 undergarment, Army ABDU-BDO system, and Air Force CWU-66/P Overgarment. JPACE will provide aviators with improvements in protection, reduced heat stress in CB environments, and extended wear and service life. JPACE will be compatible with legacy aviation mask systems and co-developmental masks, such as the Joint Service Aircrew Mask (JSAM). This operational capability will support all Services

Contractors

Creative Apparel
Belfast, ME

NCTRF
Natick, MA

FY04 Accomplishments

- Continued combined Developmental Testing (DT)/Operational Testing (OT) with durability and other system level testing, including chemical Man-in-Simulant Test (MIST), aerosol test, and swatch test.
- Developed and tested contaminated doffing procedures, and acquired final safe-to-fly decision from the Services.
- Prepared for Independent Operational Test & Evaluation (IOT&E).

FY05 Objectives

- Commence IOT&E.
- Conduct Milestone C decision for Low Rate Initial Production (LRIP) of ensembles; prepare documentation for award contract options.
- Finalize garment specifications and patterns.
- Conduct System Verification Review (SVR).
- Finalize program, logistics, and technical documentation required to ensure that ensembles are fully supported.
- Procure 620 JPACE LRIP suits and 26,029 JPACE suits for all Services.

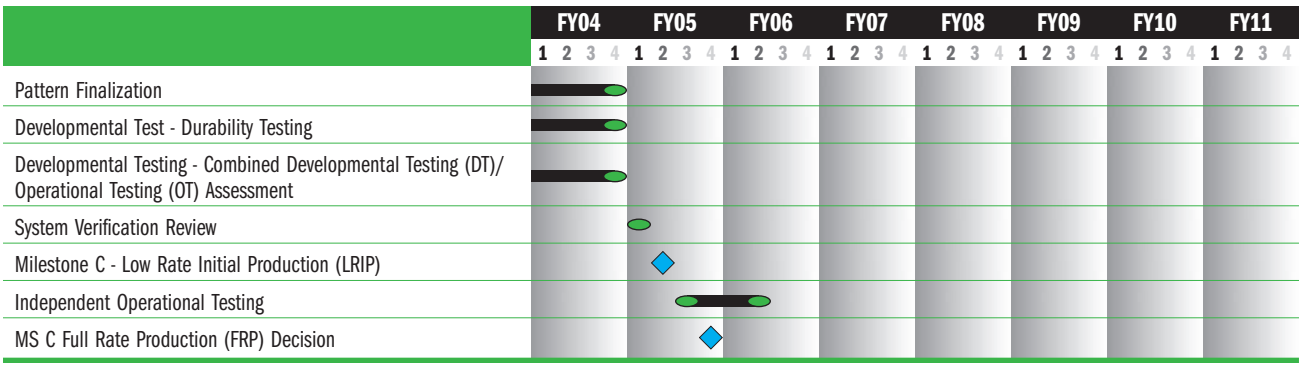
FY06 Objectives

- Continue procurement of 37,404 JPACE suits for all Services.

FY07 Objectives

- Continue procurement of 38,408 JPACE suits for all Services.

Acquisition Phase



Joint Service Mask Leakage Tester (JSMLT)

- **Determine mask serviceability**
- **Identify faulty components**
- **Perform Quantitative Fit Factor Tests**
- **Set up and capable of operation in 20 minutes**
- **Test 12 masks or perform 4 fit tests per hour**
- **Portable**
- **Forward deployable**
- **Incorporates functions of 5 leak testers (M14, Q204, Q179, M4A1 and Q79A1) and M41 Protective Assessment Test System (PATS)**

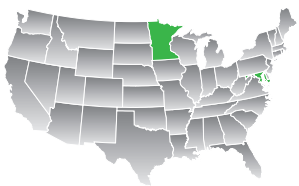
Program Description

The JSMLT is a Commercial off-the-shelf (COTS) man-portable mask leakage tester capable of determining the serviceability of CBRN negative pressure protective masks, identifying defective mask components, and performing Quantitative Fit Factor Testing to determine proper fit of the mask. The JSMLT is compatible with current negative pressure protective masks and is upgradeable to accommodate future masks. The JSMLT alleviates the need for five different test devices (M14 Mask Leakage Tester, M4A1 Outlet Valve Leakage Tester, Q204 Drink Train Leakage Tester, Q179 Drink Train/Quick Disconnect Leakage Tester, and Q79A1 Air Flow Leakage Tester) and M41 Protective Assessment Test System (PATS).

Contractors

Air Techniques International
Owing Mills, MD

TSI Inc.
Shoreview, MN



FY04 Accomplishments

- Procured 19 JSMLT units and 2,280 M41 PATS.

FY05 Objectives

- Procure 240 JSMLT units.

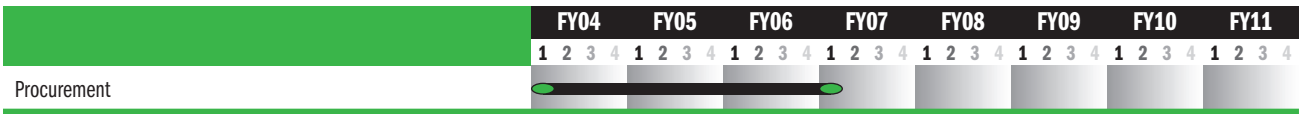
FY06 Objectives

- Procure 182 JSMLT units.

FY07 Objectives

- Procure 113 JSMLT units.

Acquisition Phase



Chemical Biological Protective Shelter/P3I (CBPS)

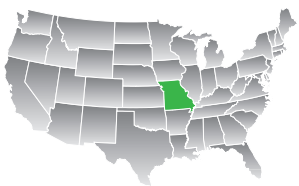
- **NBC protection for Battalion Aid Station for forward battle areas**
- **Provides an integrated, environmentally controlled, self-contained collective protection system in mobile or static modes with either internal or external power sources**
- **Provides 72 hours of continuous protection in a CBR environment**
- **Mobile, air transportable, expandable, rapidly deployable, and fully operational within 20 minutes**

Program Description

The CBPS replaces the M51 Collective Protection Shelter. It consists of a Lightweight Multipurpose Shelter (LMS) mounted on an expanded capacity variant High Mobility Multipurpose Wheeled Vehicle (HMMWV) and a 300 square foot air beam supported soft shelter. The CBPS provides 72 hours of a contamination free, environmentally controlled working area for medical, combat service, and combat service support personnel to obtain relief from the need to continuously wear chemical-biological individual protective clothing. Medical equipment and crew gear are transported inside the LMS and additional medical equipment is carried on a towed high mobility trailer.

Contractors

Engineered Air Systems
St Louis, MO



An Engineering Change Proposal (ECP) is being implemented to replace the hydraulic powered environmental support systems (Model 1) components and eliminate the need to use the HMMWV engine to power the hydraulic pump. This ECP will incorporate a self-powered electro-mechanical environmental support system (Model 2). A contract option has been exercised to procure 26 CBPS (Model 2) systems. A new five year production contract will be awarded in FY06 to continue procurement of the CBPS systems.

FY05 Objectives

- Complete New Equipment Training and Total Package Fielding for 101st Airborne, 10th Mountain and 4th Infantry.
- Procure kits to retrofit fielded CBPS M1 (hydraulic) systems to CBPS M2 (electric) systems.
- Release performance based Request for Proposal for the next competitive contract award.

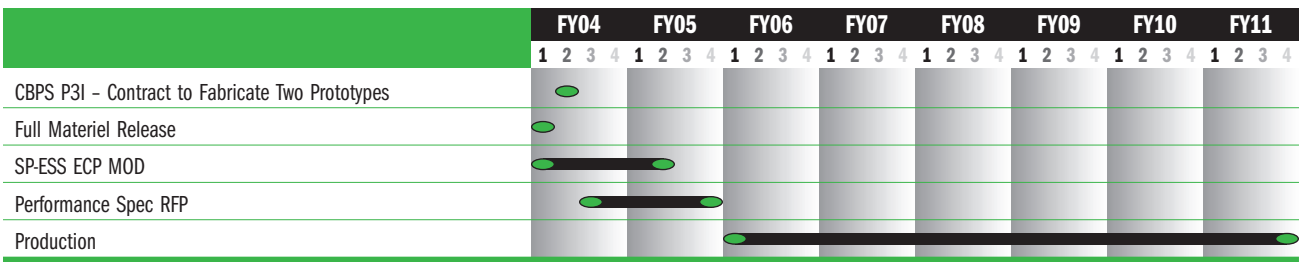
FY06 Objectives

- Award new production contract.
- Initiate fielding of the CBPS M2 retrofit kits.

FY07 Objectives

- Continue procurement.

Acquisition Phase



Collectively Protected Field Hospitals (CPFH)

- **Provides collectively protected medical treatment facilities**
- **Ensures Service field hospital requirements are met**

Program Description

CPFH provides the Joint Services a capability to collectively protect combat support field hospitals. The Services use field hospitals which are similar in design but vary in size and configuration. Collective protection is provided to each field hospital by M28 Collective Protection Equipment configured to the specific tentage used by each Service. Systems currently supported by CPFH are the Army's Chemically Protected Deployable Medical System (CP DEPMEDS) and the Air Force's Collectively Protected Expeditionary Medical Support (CP EMEDS).

CP DEPMEDS can support up to a 236-bed hospital unit base and includes a Collectively Protected (CP) latrine/water distribution systems, CP International Organization for Standardization (ISO) shelters, low-pressure alarms, support kits, Chemical and Biological (CB) protected environmental control units and other ancillary items. The components are packaged as a set and provided to hospitals deploying to a CB threat area. Five CP DEPMEDS will be

Contractors

SFA, Inc.
FREDERICK, MD

pre-positioned to support rapid deployment and the remaining placed in Army War Reserve. Six CP DEPMEDS were fielded as part of Operation Iraqi Freedom. The Army deployment of combat support field hospital, hospital unit base has changed from the current Medical Force 2000 (MF2K), which deploys as a single hospital with 236 patient beds, to the Medical Reengineering Initiative (MRI), which allows for the hospital to be deployed in either 84, 164 or 248 patient beds, to support the Army's transformation in support of the Unit of Action.

CP EMEDS is capable of being deployed in various configurations by interconnecting its components. CP EMEDS consists of a tented facility with or without ISO shelters. CP EMEDS can support up to 50 patient care beds (incrementalized into 10-bed, 15-bed and 25-beds), one operating room (two operating tables), ancillary support services (lab, x-ray, pharmacy), equipment and personnel capable of providing resuscitative surgery, postoperative stabilization, general medical and dental care for patients.

FY05 Objectives

- Complete the conversion of two Medical Force 2000 (MF2K) configured CP DEPMEDS to the Medical Reengineering Initiative (MRI) configuration.

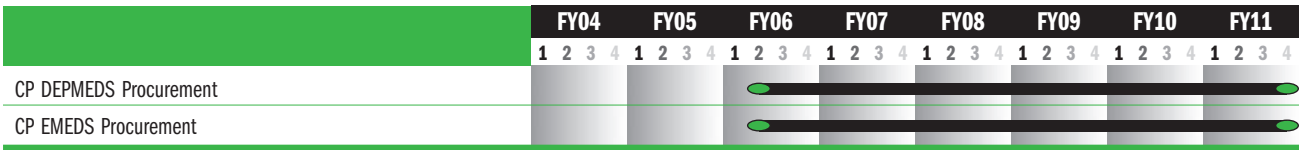
FY06 Objectives

- Convert two MF2K configured CP DEPMEDS to the MRI configuration.

FY07 Objectives

- Convert two MF2K configured CP DEPMEDS to the MRI configuration.

Acquisition Phase

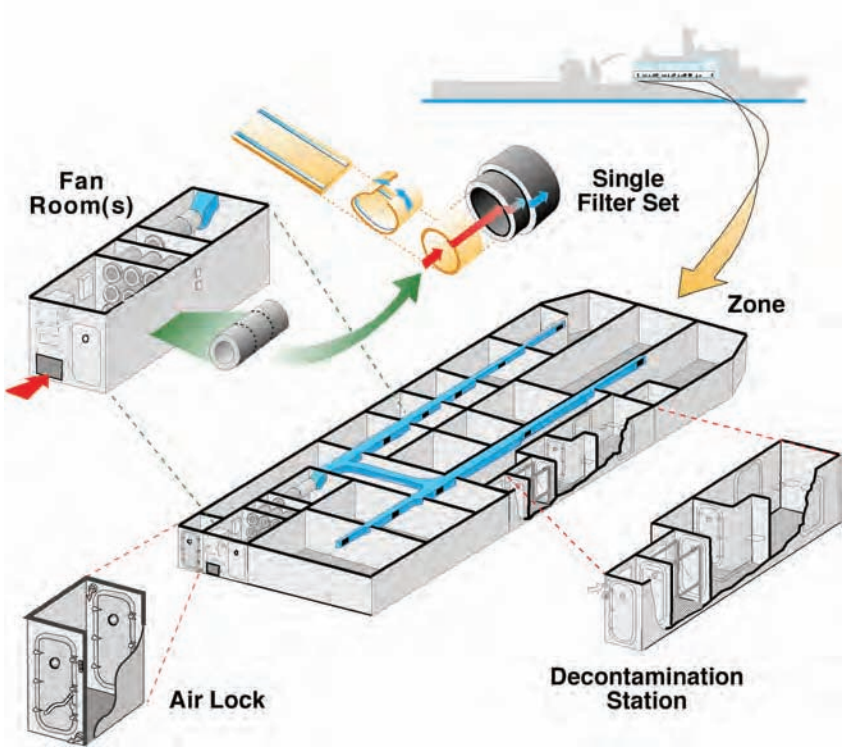


Collective Protection System Backfit (CPSBKFT)

- **Provides collective protection zones within in-service amphibious ships**
- **Air filters and pressurization of spaces prevents entry of NBC contaminants**
- **Eliminates need to wear protective gear (i.e., suits, masks) in protected areas**
- **Increases ship's ability to perform mission critical/sustaining operations in an NBC contaminated environment**

Program Description

The shipboard Collective Protection Systems (CPS) Backfit Program was created for in-service Amphibious Class Ships as a defensive measure against Weapons of Mass Destruction (WMD) to protect personnel and vital ship spaces from toxic chemicals, biological agents, and radioactive fallout. CPS is integrated with the ship's Heating, Ventilation, and Air-Conditioning (HVAC) systems and provides filtered air supply for over-pressurization of specified shipboard zones to keep toxic contamination from entering protected spaces. CPS eliminates the need for the ship's crew to wear protective gear (i.e., suits, masks). CPS will be installed on high priority ships and is adaptable to any ship airflow requirements.



Contractors

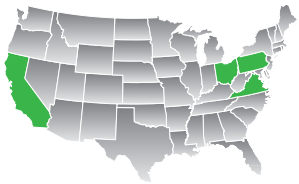
American Fan Company
Fairfield, OH

Anderson Metal Industries, Inc.
Franklin, PA

National Steel and Shipbuilding Company (NASSCO)
San Diego, CA

New World Associates
Fredericksburg, VA

Norfolk Shipbuilding Company (NORSHPCO)
Norfolk, VA



FY05 Objectives

COMPLETE SHIP INSTALLATIONS:
- USS Peleliu (LHA-5)

BEGIN SHIP INSTALLATIONS:
- USS Bonhomme Richard (LHD-6)

FY06 Objectives

COMPLETE SHIP INSTALLATIONS:
- USS Bonhomme Richard (LHD-6)
- USS Nassau (LHA-4)

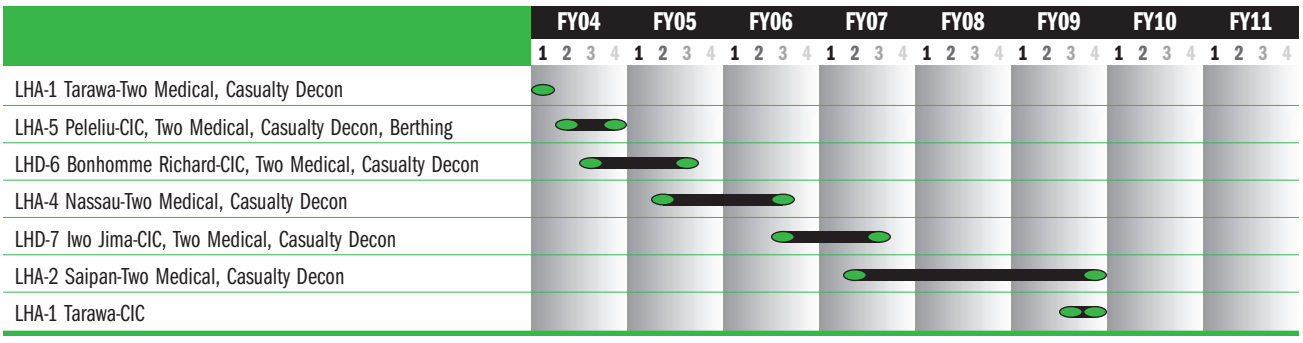
BEGIN SHIP INSTALLATIONS:
- USS Nassau (LHA-4)

FY07 Objectives

COMPLETE SHIP INSTALLATIONS:
- USS Iwo Jima (LHD-7)

BEGIN SHIP INSTALLATIONS:
- USS Iwo Jima (LHD-7)

Acquisition Phase



Joint Collective Protection Equipment (JCPE)

- **Improved filter development and filter standardization**
- **Improved liner systems**
- **Standardized Collective Protection system components**
- **Reduced weight**
- **Improved maintainability**
- **Reduced logistics burden**

Program Description

The JCPE program consolidates improvements to post-Milestone C collective protection programs into one cost-effective program for currently fielded fixed site, building, shipboard, portable shelter, and vehicle collective protection systems.

The JCPE program provides proven solutions to identified deficiencies, needed improvements, and cost saving standardization of currently fielded collective protection systems. Using the latest technologies in filtration, shelter materials, and environmental controls to provide affordable, lightweight, easy to operate and maintain equipment, the JCPE program provides these needed improvements. Inserting improved technology into currently fielded systems will result in better performance with reduced operating costs. Standardization of individual system components across Joint Service mission areas reduces the logistical burden while maintaining the industrial base. Taken both individually and collectively, these tasks improve NBC defense readiness for the Joint Services by providing off-the-shelf solutions for deficiencies in currently fielded collective protection equipment.

FY04 Accomplishments

- Completed development and testing of a Collectively Protected Expeditionary Latrine for the Collectively Protected Expeditionary Medical System (CP EMEDS).
- Completed development and testing of a modified M28 liner for large capacity shelters.
- Completed development and testing to increase efficiency of collective protection system supply fan motors to operate at peak performance over the entire range of filter loading.
- Completed design and testing of improvements to liner material, construction, and enclosures.

Contractors

Production Products, Inc.
St Louis, MO

- Completed testing of improved airlock door systems to increase durability and decrease life cycle costs for all existing CB shelter systems utilizing the bump through door airlocks.
- Completed development and testing of a filter moisture indicator.
- Completed development and testing of a redesigned CP EMEDS collective protection liner system for use in the Chemically Protected Deployable Medical Systems version of the Small Shelter System (SSS).
- Completed a comprehensive engineering study and analysis of the collective protection equipment systems used with the Patriot Missile system to evaluate and investigate potential upgrades/improvements using current technologies.
- Completed testing of the M48A1 gas particulate filter alternate packaging design to lower life cycle costs.

FY05 Objectives

- Complete development and testing of reliability improvements of 400 Cubic Feet per Minute (CFM) fan filter assembly and M28 blowers.
- Continue live agent testing of improved 100/200 CFM gas filters.
- Complete integration and testing of a Tunnel Airlock for Litter Patients (TALP) system with a Modular General Purpose Tent System.
- Complete development and testing of an SSS contamination control area/airlock integration.
- Complete development of shipboard collective protection automation.

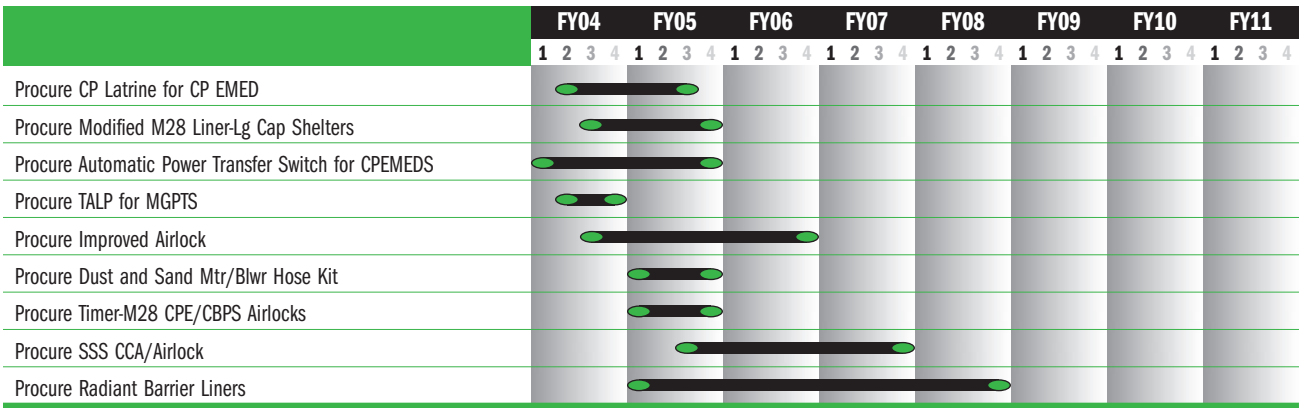
FY06 Objectives

- Complete live agent testing of improved 100/200 CFM gas filters.
- Complete testing of 100/200 CFM gas filters with new media to provide protection against selected toxic industrial chemicals.
- Complete development and testing of collective protection system, operational blast mitigation techniques.

FY07 Objectives

- Initiate changes to the technical data package on improvement to 28 volt direct current motor on the M93 gas particulate filter unit.
- Initiate a test and surveillance effort to better understand factors affecting service life and capacity of filters for land-based facilities.
- Initiate development and testing of BASE-X shelter liners.

Acquisition Phase



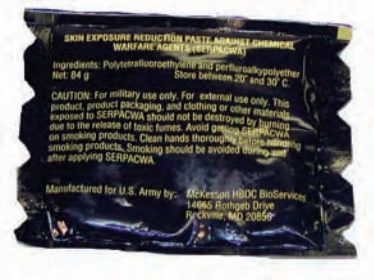
Medical

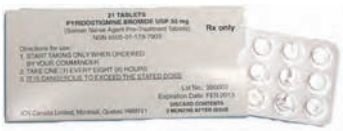
Medical Chemical Defense (MEDCHEM)

- **Soman Nerve Agent Pyridostigmine Pretreatment (SNAPP)**
- **Advanced Anticonvulsant System (AAS)**
- **Skin Exposure Reduction Paste Against Chemical Warfare Agents (SERPACWA)**
- **Antidote Treatment–Nerve Agent, Autoinjector (ATNAA)**
- **Improved Nerve Agent Treatment System (INATS)**
- **Plasma Bioscavenger (pBSCAV) and Recombinant Bioscavenger (rBSCAV)**
- **Chemical Surety Facility**

Program Description

MEDCHEM funds the development of medical materiel and other medical equipment items necessary to provide an effective capability for medical defense pretreatment and treatment against chemical warfare agent threats facing U.S. Forces in the field. This project supports system development and fielding of prophylactic and therapeutic drugs, post-exposure treatment, diagnostic equipment, and other life support equipment for protection against and management of chemical warfare agent intoxication.





Contractors

McKesson BioServices
Rockville, MD

FY04 Accomplishments

Soman Nerve Agent Pyridostigmine Pretreatment (SNAPP)

- Continued Food and Drug Administration (FDA) required post approval studies.

Advanced Anticonvulsant System (AAS)

- Initiated pre-clinical and acute toxicology studies, Phase 1 clinical study and Investigational New Drug (IND) application.

Skin Exposure Reduction Paste Against Chemical Warfare Agents (SERPACWA)

- Continued FDA manufacturing requirements, post approval requirements, and field trials.

Antidote Treatment–Nerve Agent, Autoinjector (ATNAA)

- Initiated shelf-life extension stability studies and post marketing studies required by the FDA.

Improved Nerve Agent Treatment System (INATS)

- Initiated pre-clinical, acute toxicology and stability studies and process development and current Good Manufacturing Practices (cGMP) requirements.

Plasma Bioscavenger (pBSCAV)

- Prepared and conducted Milestone A review for Plasma Bioscavenger.

FY05 Objectives

SNAPP

- Continue FDA required post approval studies.

AAS

- Continue pre-clinical and acute toxicology studies.
- Continue FDA IND/regulatory strategy planning; prepare IND and planning for Phase 1 clinical studies of anticonvulsant for treatment of Non Traditional Agent (NTA) induced seizures.
- Initiate process development/cGMP requirements.

SERPACWA

- Complete FDA manufacturing and post approval requirements.

ATNAA

- Continue shelf-life extension stability studies and post marketing studies required by the FDA.
- Initiate and complete move to new production facility in St. Louis, Missouri.

INATS

- Continue pre-clinical, acute toxicology and stability studies and process development and cGMP requirements.
- Plan non-human primate oxime studies, animal studies to demonstrate efficacy against NTA and begin preparation of IND application.

pBSCAV

- Select contractor for development through Phase 1 clinical trial.
- Initiate manufacturing process development.
- Initiate assay development and qualification.
- Initiate preclinical (acute toxicology) testing.

rBSCAV

- Prepare and conduct Milestone A review.

Chemical Surety Facility

- Initiate test and evaluation of medical chemical defense products under Good Laboratory Practices (GLP).

FY06 Objectives

SNAPP

- Complete FDA required post approval studies.

AAS

- Complete pre-clinical and acute toxicology studies (optimum serum levels of midazolam and neuropathological analysis studies).
- Complete FDA IND/Regulatory strategy planning, submit IND and planning for Phase 1 clinical studies of anticonvulsant for treatment of NTA induced seizures.
- Initiate Phase 1 clinical safety studies (definitive clinical efficacy/status epilepticus).

INATS

- Initiate human safety studies.
- Continue cGMP process development, IND application process, non-human primate work, pre-clinical, acute toxicology and stability studies.
- Initiate Phase 1 clinical safety study.

ATNAA

- Complete shelf-life extension stability studies required by the FDA.
- Complete the renewal of the Industrial Base Maintenance Contract for ATNAA.

SERPACWA

- Continue shelf-life monitoring.

pBSCAV

- File IND application.
- Initiate and complete pre-clinical safety studies and initiate Phase 1 clinical safety studies.
- Complete manufacturing development and manufacture small scale lots.
- Complete assay development and qualification.

rBSCAV

- Select contractor for development.
- Initiate manufacturing process development.

Chemical Surety Facility

- Continue test and evaluation of medical chemical defense products under GLP.

FY07 Objectives

AAS

- Initiate, if required, Phase 2 clinical safety studies (definitive clinical efficacy/status epilepticus).
- Continue process development/cGMP requirements.
- Plan DT/OT of packaging.

ATNAA

- Complete shelf-life extension stability studies required by the FDA on autoinjectors produced in the new Westport facility in St. Louis, MO.
- Continue ATNAA production to replace Mark 1 kits in inventory.

SERPACWA

- Continue shelf-life monitoring.

INATS

- Complete non-human primate oxime studies and Phase 1 clinical studies, submit IND, and achieve Milestone B.
- Continue cGMP process development and pre-clinical, acute toxicology and stability studies.
- Initiate definitive animal efficacy studies and Phase 2 clinical safety studies.

pBSCAV

- Complete Phase 1 clinical safety studies and transition product to the Department of Health and Human Services (DHHS).

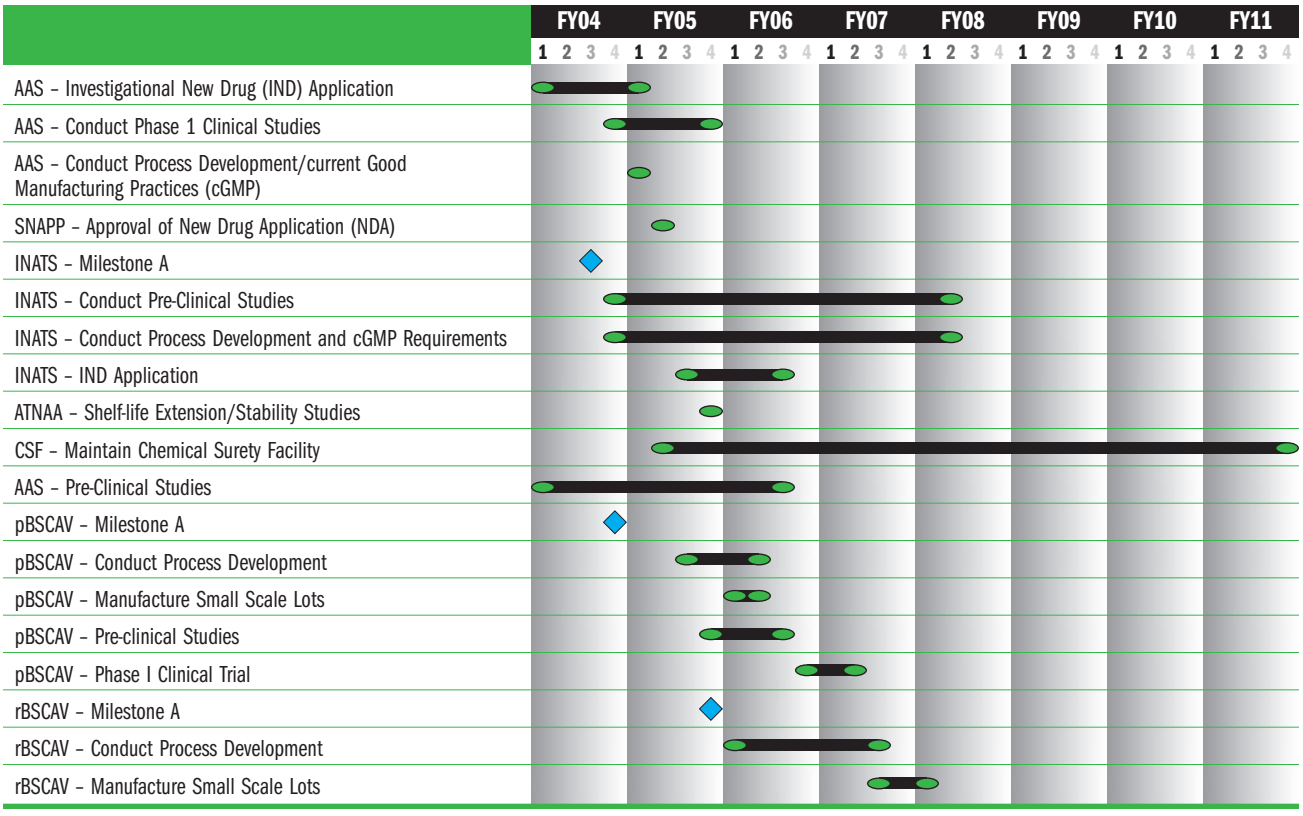
rBSCAV

- Complete small-scale process development and test/evaluate medical products against traditional and non-traditional agents, pre-clinical safety studies and submit IND application.

Chemical Surety Facility

- Continue test and evaluation of medical chemical defense products under GLP.

Acquisition Phase



SENTINEL

Medical

Biological Defense Vaccines

Vaccines Currently Funded for Development:

- **Encephalitis Vaccine (VAC ENC)**
- **Plague Vaccine (VAC PLG)**
- **Botulinum Vaccine (VAC BOT)**
- **Ⓢ Next Generation Anthrax Vaccine (VAC NGA)**
- **Ricin Vaccine (VAC RIC)**

Vaccines and Biologics Currently Funded for Procurement:

- **Ⓢ Smallpox Vaccine (VAC SPX)**
- **Vaccinia Immune Globulin (VIG)**
- **Anthrax Vaccine**

Program Description

This project funds the Joint Vaccine Acquisition Program and other activities involving the development, licensure and production of vaccines and other medical products directed against validated Biological Warfare (BW) agents to include bacteria, viruses, and toxins.

Medical biological defense product development involves expanded clinical and process development efforts to evaluate the products' safety and efficacy. These efforts are required to be submitted to support the product and establishment applications for Food and Drug Administration (FDA) licensing. This program is designed to procure sufficient FDA-licensed Anthrax Vaccine Adsorbed (AVA) to meet the Secretary of Defense mandated immunization program.

FY04 Accomplishments

Encephalitis Vaccine

- Completed assay development and qualification, and current Good Manufacturing Practice (cGMP) pilot lot release testing with release for clinical use, submitted Investigational New Drug (IND) application, and initiated Phase 1 clinical trial.

Plague Vaccine

- Initiated full-scale manufacturing process development, continued stability testing and non-clinical studies, manufactured cGMP pilot lot, prepared and submitted IND application, and conducted animal safety studies.

Recombinant Botulinum Vaccine

- Continued non-clinical studies and final container stability testing; submitted IND application; initiated Phase 1 clinical trial, process validation to include validation processes for the manufacture of serotypes A and B, manufacturing scale-up, and polyclonal antibody production for proof of concept in non-clinical trials.

Next Generation Anthrax Vaccine

- Completed Phase 1 clinical trial. Continued studies for alternative delivery systems and development of an orally delivered anthrax-plague vaccine.

Smallpox Vaccine (VIG)

- Terminated Smallpox DoD program; submitted Biologics License Application (BLA) for Vaccinia Immune Globulin (VIG) product.

Anthrax Vaccine

- Continued Anthrax Vaccine production.

FY05 Objectives

Plague Vaccine

- Conduct Phase 1 clinical trial; continue non-clinical studies, stability testing, and full-scale manufacturing process development; and initiate Phase 2 clinical trial.

Ⓢ *SENTINEL designated programs.*

Contractors

DynPort Vaccine Company
Frederick, MD

Recombinant Botulinum Vaccine

- Continue process validation efforts for serotypes A and B; complete Phase 1 clinical trial; complete non-clinical studies and continue stability testing; complete manufacturing scale-up.

Smallpox Vaccine (VIG)

- Receive FDA licensure for the VIG program, and initiate production.

Anthrax Vaccine

- Continue Anthrax Vaccine production.

FY06 Objectives

Encephalitis Vaccine

- Complete Phase 1 clinical trial. Initiate manufacturing process validation, Phase 2 clinical trail immunological testing and passive transfer studies with samples from the Phase 2 trial.

Plague Vaccine

- Continue Phase 2 clinical trial, non-clinical studies, stability testing, and full-scale manufacturing process development.

Recombinant Botulinum Vaccine

- Continue process validation efforts for serotypes A and B; complete Phase 1 clinical trial; continue non-clinical studies and stability testing; complete manufacturing scale-up and initiate consistency lot production; initiate Phase 2 clinical trial.

Ricin Vaccine

- Initiate technology transfer from the technology base, initiate assay development for vaccine candidate and initiate manufacturing process development.

Smallpox Vaccine (VIG)

- Continue VIG program production.

Anthrax Vaccine

- Continue Anthrax Vaccine production.

FY07 Objectives

Plague Vaccine

- Complete Phase 2 clinical trial and full-scale manufacturing process development; Continue non-clinical studies and stability testing; and initiate Phase 3 clinical trial.

Recombinant Botulinum Vaccine

- Continue process validation efforts for serotypes A&B; Continue non-clinical studies and stability testing; complete consistency lot production; Continue Phase 2 clinical trail.

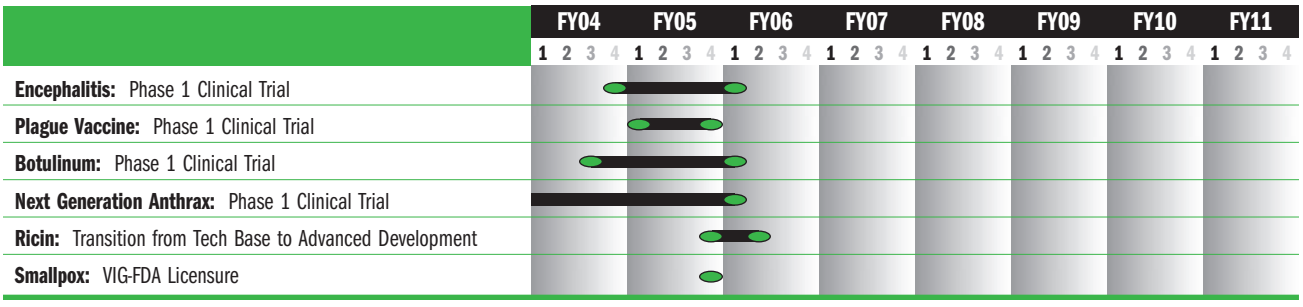
Smallpox Vaccine (VIG)

- Continue Vaccinia Immune Globulin (VIG) program production.

Anthrax Vaccine

- Continue Anthrax Vaccine production.

Acquisition Phase



Joint Service Personnel/Skin Decontamination Systems (JSPDS)

- **Personnel skin decontamination capability for use on casualties—with and without open wound**
- **Provides a common capability of decontamination**

Program Description

JSPDS provides the Services with a capability to remove or neutralize Nuclear, Biological, and Chemical (NBC) contamination, and Toxic Industrial Materials from personnel which have been exposed to the damaging effects of these threat materials. JSPDS will be employed independently, or in conjunction with individual decontamination elements in the Army, Air Force, Navy and Marine Corps operating in tactical and peacetime environments.

Contractors

Canadian Commercial Corporation
MONTREAL, QUEBEC, CANADA

FY05 Objectives

- Milestone B approval by the JPEO.
- Test Evaluation Master Plan (TEMP) approval by all services and signed by JPEO.

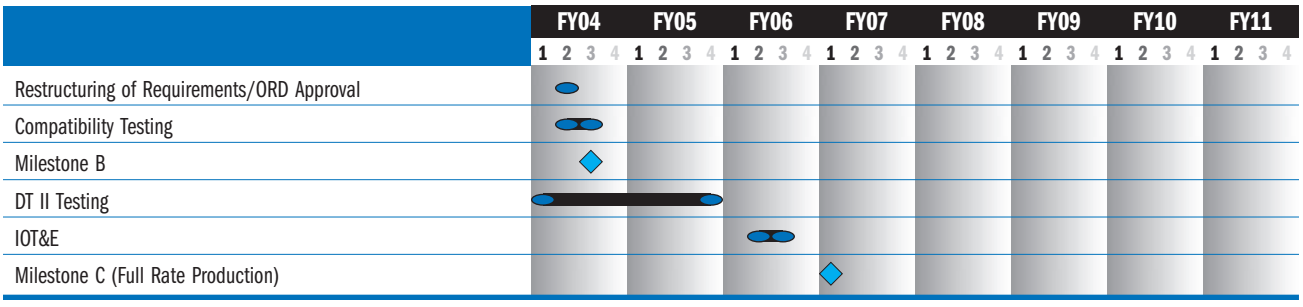
FY06 Objectives

- Develop logistics documentation and perform training to support testing for JSPDS.
- Milestone C followed by Full Rate Production (FRP).

FY07 Objectives

- Overarching Decontamination Model throughout RDT&E – Develop a model to predict contamination-caused hazards for all phases of chemical and biological threats.
- Develop and validate chemical decontamination test methods for full-system tests.

Acquisition Phase



Joint Service Transportable Decontamination System–Small Scale (JSTDS-SS)

- **Decontamination of fixed facilities, ports of entry, and airfields**
- **Dispensing of the entire family of decontaminants regardless of form**
- **Provides a common capability of decontamination**
- **Unification of dispensing methods**

Program Description

JSTDS-SS provides the Services with a capability to remove or neutralize Nuclear, Biological, and Chemical (NBC) contamination, and Toxic Industrial Materials from fixed sites, ports of entry, airfields, logistics support bases, key command and control centers, and ships which have been exposed to the damaging effects of these threat materials. JSTDS-SS will be employed independently, or in conjunction with conventional decontamination elements in the Army, Air Force, Navy and Marine Corps operating in tactical and peacetime environments. JSTDS-SS will incorporate a family of decontaminants and a family of decontamination application systems to enhance force protection through equipment, facility, and area decontamination.

Contractors

TBD

FY05 Objectives

- Milestone B approval by the JPEO.
- Test Evaluation Master Plan (TEMP) endorsement by all services and approved by JPEO.
- Award contracts to two manufacturers for JSTDS prototypes.

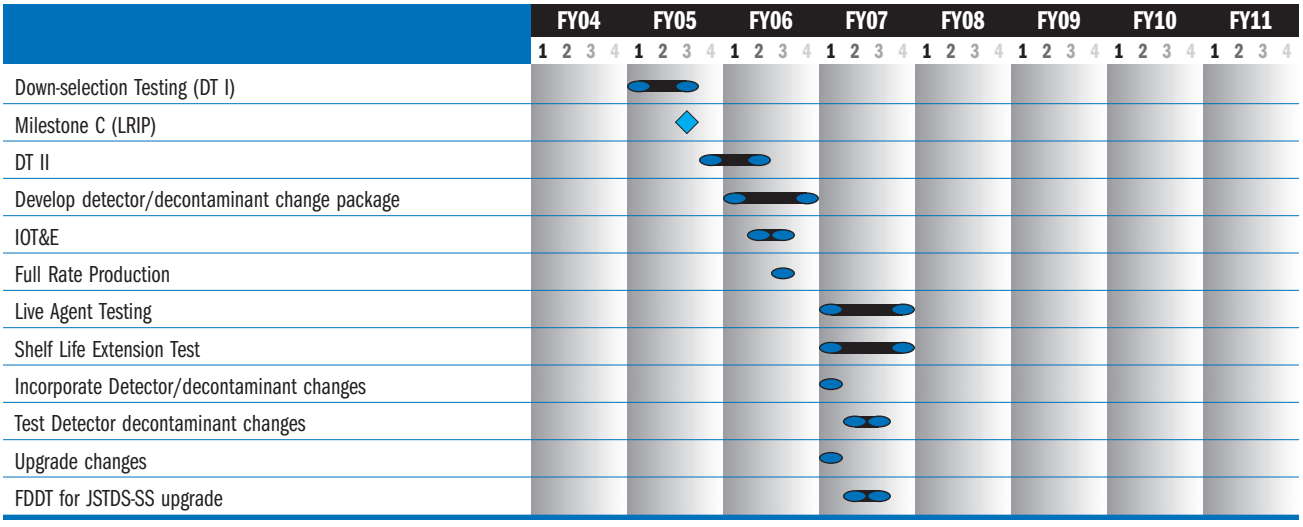
FY06 Objectives

- Overarching Decontamination Model throughout RDT&E – Develop a model to predict contamination-caused hazards for all phases of chemical and biological threats.
- Develop and validate chemical decontamination test methods for full-system tests.
- Milestone C followed by Low Rate Initial Production (LRIP).

FY07 Objectives

- Upgrade and standardize Laboratory Decontamination Test Methods–develop and validate standardized, common test and analysis methods that will yield performance data that can be used across DoD.
- Certify chamber fixtures for use with biological agents, develop and validate biological decontamination methods for subsequent use in the Biological Decontamination Chamber.

Acquisition Phase



Joint Service Sensitive Equipment Decontamination (JSSED)

- **Non-aqueous decontaminate solution**
- **Tactical mission capability maintained through rapid decontamination**
- **Easily refilled and discharged**
- **Timely decontamination of sensitive equipment**
- **The return of items to unrestricted use**
- **No reforming or condensing of contaminate in cracks or crevices**

Program Description

The Joint Service Sensitive Equipment Decontamination (JSSED) system will fill a need to decontaminate chemical and biological warfare agents from sensitive equipment, vehicle and aircraft interiors, and associated cargo, as defined by the Joint Service Operational Requirements Document for the JSSED and Joint Platform Interior Decontamination (JPID). The JPID program will concentrate on aircraft/vehicle interiors. The JSSED program focuses on the sensitive equipment which will be accomplished through the development of the XM25 Decontamination Apparatus, Sensitive Equipment. The technology for the XM25 transitioned to development in FY 2001.

Contractors

Battelle Memorial Institute
ABERDEEN, MD

Guild Associates
DUBLIN, OH

FY04 Accomplishments

- Designed and fabricated prototypes for Limited Objective Experiment (LOE) (2 units).

FY05 Objectives

- Conduct LOE and government testing.
- Prepare program documentation for the award of a competitive contract for SDD.
- Continue support to the IPT including logistics support.
- Continue studies for interior platform material identification, characteristics analysis and market analysis.
- Develop the Technology Readiness Evaluation.
- Finalize program documentation for Milestone (MS) B and initiate program documents/package for MS C.

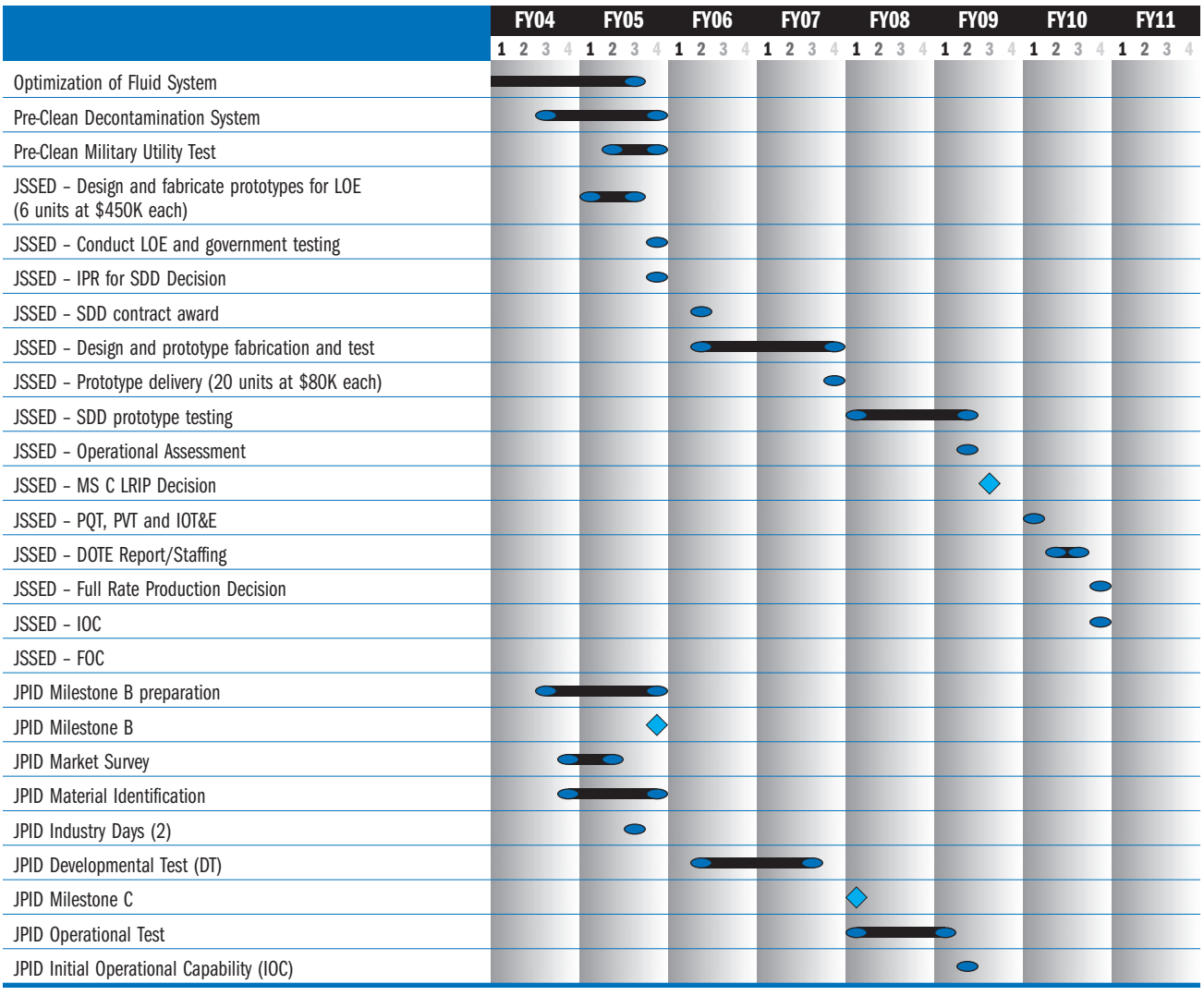
FY06 Objectives

- Award System Development and Demonstration (SDD) contract and initiate prototype award.

FY07 Objectives

- Conduct developmental testing.

Acquisition Phase



Advanced Concept Technology Demonstration (ACTD)

Contamination Avoidance at Seaports of Debarkation (CASPOD)

CBRN Unmanned Ground Reconnaissance (CUGR)

What are ACTDs?

Advanced Concept Technology Demonstrations (ACTDs) are designed to accelerate the formal acquisition process by providing more timely solutions to validated warfighter requirements.

The planning and coordination required for ACTD approval accomplishes three things:

- The proposed ACTD must address and validate a joint requirement.
- The ACTD must identify a mature technology with potential to satisfy that requirement.
- The ACTD must coordinate a transition plan with a formal acquisition program manager to ensure that, if successfully demonstrated, the candidate technology will be accepted into an appropriate program of record.

Once these criteria are met, the proposed ACTD is submitted to the Deputy Under Secretary of Defense for Advanced Systems & Concepts (DUSD (AS&C)) for consideration and approval by the Joint Requirements Oversight Council (JROC) as a new ACTD start in the next fiscal year. Normally, an ACTD consists of a 1–3 year demonstration phase and a 2-year residual support phase.

ACTDs are managed and executed jointly by a representative of the developer community, such as the Joint Science and Technology Office (JSTO), and a warfighting user/sponsor, often a combatant command (COCOM). The major source of ACTD funding is normally provided by the developer community representative, with the DUSD (AS&C) often providing supplemental funding. The developer is responsible for identifying mature candidate technologies and ensuring their efficacy which may involve limited technical testing. The user/sponsor is responsible for defining the mission, operational scenario, concept of employment, and providing the operational units. Upon conclusion of the ACTD, the user/sponsor provides a determination of the military utility and operational impact of the technology demonstrated. Following the demonstration phase, candidate technologies that successfully demonstrated a military utility are provided to the sponsoring COCOM to provide an interim limited capability.

At the conclusion of an ACTD, successfully demonstrated technologies with proven military utility can either be accepted into advanced stages of the formal acquisition process, proceed directly into limited or full-scale production, or be returned to the technical base for further development.

Contamination Avoidance at Seaports of Debarkation (CASPOD)

Objective

- Identify, integrate and demonstrate technologies and tools that will provide significant increases to currently fielded capabilities in warning/situational awareness, detection, protection and decontamination that will collectively mitigate adverse effects and restore SPOD operations (to at least 80% efficiency) within 24–36 hours after attack, in order to support operational war plans.
- Demonstrate operational concepts and Tactics, Techniques & Procedures (TTPs) to establish and maintain SPOD's CB defense operations before, during and after CB attacks.
- Develop and demonstrate resident, prepositioned or rapidly transportable CB equipment, materiel packages, and force structure needed for reemployment of those assets and restoration and mitigation capability at SPODs.
- Provide a forum, process and structure for addressing and modifying US, Coalition and host nation policy implications.

Lightweight Chemical Detector

PortWarn C2 System

Sponsor

- Central Command

ACTD Scenario

- Chemical or biological attack on a seaport.

Status

Dry Filter Unit (DFU) Biological Collector

- The CASPOD ACTD is a 5-year demonstration consisting of a 3-year execution phase, and a 2-year residual support phase.
- During the execution phase, the military utility of candidate technologies were assessed in two demonstration events: a Preliminary Demo (PD) at Charleston Naval Station, South Carolina, Sep 03, and a Final Demo Sep 04 at Beaumont, Texas. In each demonstration, mature technologies and TTPs were assessed as part of a realistic operational scenario.
- During the residual support phase (FY05/06), the ACTD will support candidate technologies that successfully demonstrated military utility to provide a limited operational capability.

CBRN Unmanned Ground Reconnaissance (CUGR)

Objective

The CUGR ACTD seeks to bridge two NBC reconnaissance capability gaps with separate technologies:

Joint Service Light NBC Reconnaissance System (JSLNBCRS) with the Joint Contaminated Surface Detector (JCSD)

- First, the Joint Command Surface Detection (JCSD) component will improve the speed of current, manned NBC reconnaissance systems. The JCSD is a high speed, laser-based, surface contamination detection system, which replaces the double wheeled mechanical sampler and the time-delayed process of contamination analysis that necessitates slow vehicle speeds. The JCSD permits maximum vehicle speeds during surface chemical contamination detection missions.
- Second, the CBRN Unmanned Ground Vehicle (CUGV) is a small, remote controlled, sensor equipped robot that will also be integrated into the JSLNBCRS. The CUGV will provide an alternative to foot patrols in conducting CBRN reconnaissance in high risk and limited access terrain environments.

PacBot Unmanned Ground Vehicle (UGV)

Sponsor

- Pacific Command

ACTD Scenario

- Near real-time (vehicle speed immaterial) chemical agent surface contamination detection and identification and a sensor-equipped, small robot to be the recon crew's "point man" in high risk contamination reconnaissance.

Status

- FY05: Congress approved the ACTD and DUSD (AT&L) signed the implementation Directive. Management and Transition Plans Staffing and Approvals; Advanced Concepts of Operations (CONOPS) and TTP development; JCSD and CUGV design; JCSD/JSLNBCRS and CUGV prototype integration.
- FY06: Finalize JCSD/JSLNBCRS and CUGV (dismounted) CONOPS/TTPs; conduct initial technical and operational demonstrations; CUGV/JSLNBCRS prototype integration.
- FY07: Finalize CUGV/JSLNBCRS CONOPS/TTPs, conduct integrated systems technical and operational demonstration and receive independent Military User Assessment.

Science and Technology

Medical S&T Program

DIAGNOSTICS CAPABILITY AREA
EMERGING THREATS CAPABILITY AREA
PRETREATMENTS CAPABILITY AREA
THERAPEUTICS CAPABILITY AREA

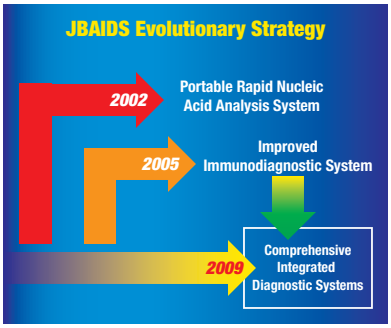
Physical S&T Program

DETECTION CAPABILITY AREA
MODELING & SIMULATION/BATTLESPACE MANAGEMENT CAPABILITY AREA
PROTECTION CAPABILITY AREA
DECONTAMINATION CAPABILITY AREA
THREAT AGENT SCIENCE CAPABILITY AREA

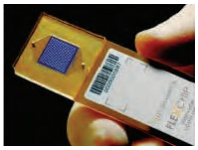
Medical S&T Program – Diagnostics Capability Area

- **Develops FDA-approved systems to identify/confirm exposure to Biological Warfare (BW) and Chemical Warfare (CW) agents, ideally before symptoms occur.**
- **Selects best technologies, identifies novel markers as targets, and designs and validates diagnostic assays for determining the presence of, or exposure to, biological and chemical threats in clinical samples.**
- **Standardized methods/requirements/documentation for assay and reagent validation and licensing.**
- **Development of field deployable, ultimately hand-held, integrated diagnostic systems for all validated BW threat agents (Joint Biological Agent Identification and Detection System, JBAIDS).**

Program Description



The Diagnostics Capability Area develops diagnostic tests and test systems to definitively identify infection by, and/or exposure to, biological and chemical agents, preferably in the early, pre-symptomatic stage. Early and definitive diagnosis permits prompt, effective therapy and rapid return to duty. Coupled with effective medical countermeasures, enhanced diagnostic capability deters the use of CBW by denying adversaries an operational advantage by using such weapons. The final products of the S&T base include assay systems, target extraction methods, reagent sets and the associated clinical devices that will be employed to assist clinical decisions. All of these products are developed with the intent of FDA approval; collaboration with other government agencies, industry, academia and allies is continuously sought.



Prototype protein microarray

Biological diagnostics deals with diagnosis of infection by, or exposure to, bacterial, viral, or toxin agents. The Diagnostics Capability Area is divided into four sub-areas:

- **TECHNOLOGY ASSESSMENT.** This subthrust area identifies promising new technologies and conducts investigations to determine the military usefulness of these technologies. The program evaluates relatively mature technologies. Approaches being pursued include DNA microarrays, whole gene amplification, and mass-spectral/bioinformatics methods. This subthrust area directly supports JBAIDS (Blocks I-III).
- **ASSAY DEVELOPMENT.** This subthrust area produces diagnostic assays for multiple platforms meeting specific technical requirements and supports assay development for new and existing technologies. The current focus is to develop immunodiagnostic (antibody-based) and nucleic (acid-based) assays; however, proteomics based approaches are being actively pursued. Investigation of more efficient sample preparation methods is included in this area. This subthrust area directly supports JBAIDS (Blocks I–III).
- **IDENTIFICATION OF NOVEL AGENTS.** This subthrust area identifies novel agent/host-specific markers that could serve as useful targets identifying the presence of/exposure to biological threats. Areas of emphasis include in vitro and in vivo modeling, identification of early, intermediate and late markers of infection and host and agent response, agent biology (molecular epidemiology, genomics, proteomics) and supporting the identification of genetically engineered threats. This subthrust area directly supports JBAIDS (Block III).
- **TEST AND EVALUATION.** This subthrust area develops animal model systems enabling diagnostic assay validation testing and performs testing of platforms and assays under field conditions. This area directly contributes to CONOPS development. This subthrust area directly supports JBAIDS (Blocks I-III).

Government Performers

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U.S. Army Medical Research Institute of Chemical Defense (USAMRICD)
ABERDEEN, MD

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SILVER SPRING, MD

Armed Forces Institute of Pathology (AFIP)
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Air Force Research Laboratory (AFRL)
DAYTON, OH

USAF School of Aerospace Medicine
SAN ANTONIO, TX

Chemical diagnostics seeks to develop **improved assays** to include **screening procedures** and **definitive analytical methods** for **verification** of chemical agents in biomedical samples.

FY04/05 Accomplishments and Objectives

- Established standardized data format for JBAIDS Block I nucleic acid assays to be used by the Advanced Developer for FDA approval, Milestone C approval.
- Completed multi-center evaluation of commercial instruments fitting requirements for a Block II immunoassay device (toxin detection).

FY06 Objectives

- Identify and develop assays to detect metabolites, adducts, and other relevant biomarkers resulting from CW exposure.
- Develop multiplexed nucleic acid and immunoassays for detecting and identifying threat agents, endemic pathogens, and emerging infectious agents.
- Develop diagnostic proteomic, genomic, and immune response profiles to CBW agents and endemic/emerging pathogens for use in future diagnostic systems.
- Develop recombinant technology for immunodiagnostic reagent production.
- Accelerate development of improved/simplified sampling and extraction techniques.
- Conduct field testing and multicenter trials of test platforms and transitioned assays.

FY07 Objectives

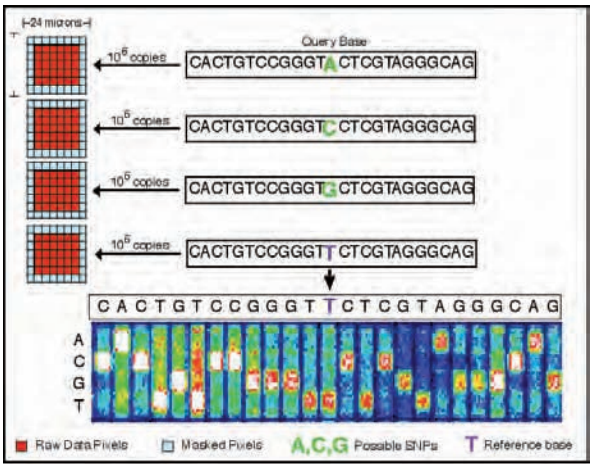
- Accelerate continuing research to develop diagnostic methods for CW agent exposure.
- Continue test and evaluation, field testing, and transition of assays and recommended platforms to advanced developments.
- Complete data package and all validation studies for advanced development transition of an automated, high-throughput whole blood cholinesterase assay, and evaluate potential to transition to hand-held platform.
- Expand library of signature proteomic, genomic, and immune responses to endemic/emerging pathogens and threat agents and adapt to deployable molecular platforms.
- Assess components of an integrated hand-held device (JBAIDS Block III) to include whole genome amplification, automated sample processing, and custom chip-based microarrays.

Medical S&T Program – Emerging Threats Capability Area

- **Develop research strategy and conduct foundational studies to prepare countermeasures against emerging or engineered chemical and biological threats.**
- **Exploit advances in host and pathogen genomics information and identify key pathogenesis pathways to target for broad-spectrum countermeasures against genetically engineered pathogens.**
- **Define best target or drug approaches for development of drugs, pre-treatments, and diagnostics products.**
- **Characterize toxicology and host response to novel chemical agents and develop medical counter-measures to prophylax or treat such exposures (pretreatments and therapeutics).**

Program Description

The Emerging Threats and Special Projects program addresses requirements for medical countermeasures and diagnostic tests directed against genetically modified threat agents, novel chemical threat agents, and acute or chronic exposure to low-level chemical warfare agents. In addition, this capability area seeks to support development and application of systems biology tools (genomics, proteomics, and bioinformatics) that address not only emerging threats, but also the other capability areas in the Medical S&T program.



Affymetrix resequencing

- **Genetically Engineered Threats.** This bioinformatics intensive thrust area assembles and integrates databases of protein domains (motifs) responsible for virulence and lethality, delivery into human cells, evasion of the immune system, and therapeutic resistance. This thrust area also explores specific areas of host-pathogen interaction to identify specific pathways in pathogenesis that might be exploited to design broadly-protective medical countermeasures. This combined information will then be applied to develop effective countermeasures against both novel (emerging) and genetically modified BW threats.
- **Low-Level Chemical Warfare Agent (CWA) Exposure-Effects and Countermeasures.** This thrust area, supporting Medical and Physical S&T areas, is supported by both Defense Technology Objectives (DTO) and non-DTO S&T research. It will explore systemic toxicity of low dose exposure(s) to CWA, with specific emphasis on biochemical, toxicological, and behavioral effects, and determine the efficacy of extant medical countermeasures on these effects. In addition, basic research efforts aim at identifying biomarkers for low-level CWA exposure, and novel neurotoxic and immunological effects.
- **Non-Traditional Nerve Agents.** This thrust area will make significant gains in our understanding of important Non-Traditional Agents (NTAs), and survey existing countermeasures to determine their effectiveness against these agents. The longer term goal is to develop new approaches, based on greater understanding of a wider array of NTAs, for creating new medical countermeasures to the wider array of novel threat agents (not all of which act via inhibition of acetylcholinesterase). Approaches include establishment of in vitro electrophysiological preparations to delineate mechanisms of action of biological regulators

Government Performers

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U.S. Army Medical Research Institute of Chemical Defense (USAMRICD)
Aberdeen Proving Ground, MD

Air Force Research Labs (AFRL)
San Antonio, TX

and to suggest approaches for pharmacologic intervention, development of 3-D models of NTA-receptor binding as an aid in drug discovery of new anticonvulsants, and development of a toxicogenomic database for the toxic effects of NTAs to aid in characterization of candidate drugs and in preparation of technical packages for FDA submission.

Electronmicrograph showing fine structure of bacillus

FY04/05 Accomplishments and Objectives

- Began evaluating existing medical countermeasures for effectiveness against NTA.
- Initiated rapid resequencing program to quickly detect changes in engineered organisms.
- Identified and published Commander's guidelines on toxicological effects of low-level chemical agent exposure.
- Expanded data on effects of new chemical agents, including effects of NTA on biological energy metabolism.
- Initiated rapid "bug-to-drug" program to discover and exploit common virluence pathways to yield broad-spectrum medical countermeasures against biological threat agents.

FY06 Objectives

- Deliver rapid resequencing capability.
- Evaluate countermeasures against non-traditional cytokine agents.
- Identify target molecules for intervention against protein NTA.
- Identify and evaluate effectiveness of spore germination inhibitors.
- Expand drug discovery program for new treatments to select non-traditional agents.
- Expand rapid "bug-to-drug" program and identify common virulence pathways leading to broad agent countermeasures for engineered threats.

FY07 Objectives

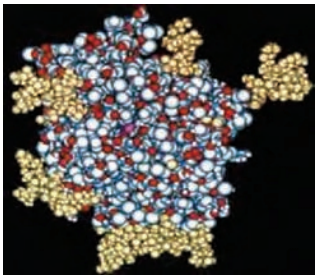
- Develop additional resequencing microarrays for additional agents.
- Expand rapid "bug-to-drug" program and test candidate broad spectrum countermeasures against select classes of agents.
- Study medical effects of additional classes of NTA including ion channel blockers and convulsant agents.
- Perform efficacy studies of candidate countermeasures against peptide NTAs and additional convulsive agents.
- Conduct genomic and proteomic expression studies in animal and *ex vivo* animal or human tissues against NTAs.

Medical S&T Program – Pretreatments Capability Area

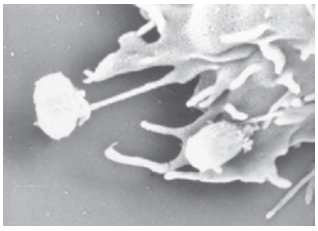
- **Develop FDA-approved vaccines against both naturally occurring and genetically modified viral, bacterial, and toxin threat agents.**
- **Develop molecular/DNA vaccines, vaccine platforms, and adjuvants.**
- **Develop multiple-agent vaccines.**
- **Develop novel needle-less vaccination systems.**
- **Develop FDA-approved pretreatments against nerve agents and broadly effective pretreatments against the class of agent, without significant adverse reactions or operational impact.**
- **Select the potentially promising candidate drugs for radiation medical countermeasures.**

Program Description

The Pretreatments Capability Area conducts basic and applied research leading to the development of vaccines against validated biological threat agents (viruses, bacteria, and toxins), and pretreatments that protect against exposure to validated threat chemical agents. Emphasis is placed on technologies and approaches leading to the next generation of biodefense vaccines, including multi-agent vaccines, molecular vaccines, new vaccine platforms and adjuvants, and alternate (needle-less) delivery methods. The Pretreatments Capability Area is divided into four sub-areas:



Molecular model of human plasma-derived butyryl



Electronmicrograph of bacillus spores adhering to cell membrane processes

- The Multi-agent Vaccine Development sub-area is intended to signal a change in strategic direction, from development of vaccines against single or closely related pathogens, to development of vaccines that simultaneously target multiple selected bio-threat pathogens or toxins through a single immunization series. Multi-agent vaccines will greatly reduce the medical logistics burden, minimize costs associated with the use of biodefense vaccines, and enhance user compliance.
- Vaccine Research Support studies are those directly supporting the transition of vaccine candidates to advanced development. Concurrently, basic research studies are intended to develop new insights into pathogen genetics, virulence factors, host-parasite interactions, pathogenic mechanisms, and host immunity using the new tools of systems biology (proteomics, genomics, and bioinformatics). These studies will result in identification of new candidate vaccine targets that will be employed in the development of advanced or next-generation molecular and multi-agent vaccines. Studies in this area currently focus on toxins, as well as bacterial and viral pathogens.
- Technology Development is divided into the two sub-areas of Molecular Vaccines and Molecular Immunology. The Molecular Vaccines research thrust is to explore gene-based vaccine technologies and validate the effectiveness of candidate vaccine platforms; including engineered viruses, recombinant or fusion proteins, molecular vaccines, and new adjuvants; that will be applicable to the development of next-generation multi-agent biodefense vaccines. These vaccine platforms should permit insertion of new immunogenic cassettes, facilitating rapid development of vaccines effective against new threat agents (genetically engineered threats or emerging infectious diseases). The second thrust area is Molecular Immunology. The goal of this subthrust area is to investigate molecular mechanisms of protective immunity in order to rationally design and rapidly develop the next-generation biodefense vaccines.

Government Performers

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- Chemical Warfare Agents (CWA) Pretreatments addresses the requirement for effective pretreatments against chemical nerve agents. Bioscavengers are plasma-derived proteins that bind nerve agents. A human plasma-derived butyrylcholinesterase (pBuChE) has passed Milestone A, and will be developed for licensure under interagency agreement by the Department of Health and Human Services (DHHS). Current research in bioscavenger proteins is involved in the development of recombinant and catalytic bioscavengers that will protect against both organophosphate nerve agents and novel threat agents.

FY04/05 Accomplishments and Objectives

- F1-V recombinant plague vaccine candidate transitioned to advanced development, passed Milestone A.
- Plasma Bioscavenger transitioned to advanced development, passed Milestone A.
- Produced and began testing recombinant human Bioscavenger produced in transgenic goats.
- Demonstrated efficacy of filovirus vaccine candidate in an animal model.
- Developed high-throughput gene expression and sequencing technologies for a genomics/proteomics approach to rapid vaccine development.

FY06 Objectives

- Evaluate Trivalent vaccine development.
- Consolidate research efforts to identify intracellular pathogen target antigens.
- Expand animal model studies for multi-agent vaccine development, including Ebola and Marburg antiviral vaccines.
- Explore genomic/bioinformatics technology for vaccine development.
- Evaluate novel vaccine targets, delivery platforms and adjuvants, including DNA vaccines, alphavirus and adenovirus vehicles, virus-like particles and recombinant fusion proteins.
- Initiate evaluation of intracellular pathogen candidate antigens in animal model systems, including the use of alternate delivery platforms.
- Evaluate immunogenicity of intact catalytic and translocation domains of botulinum neurotoxin.
- Continue testing potency and stability of ricin toxin vaccine candidates.
- Continue testing Western Equine Encephalitis (WEE)/Eastern Equine Encephalitis (EEE) vaccine constructs for eventual inclusion in a polyvalent alphavirus vaccine.
- Evaluate efficacy and safety of recombinant Bioscavenger (Block II) from transgenic animals.
- Expand evaluation of human catalytic Bioscavenger (Block III).
- Complete formulation and stability studies for a ricin vaccine.
- Complete data packages for Staphylococcus aureus enterotoxin vaccine candidates.
- From a prioritized list (~ 20 agents), identify 3 potentially promising radionuclide protective candidates for efficacy study in rodent models.
- Determine the degree of protection at a radiation dose that normally causes about 90% lethality within 30 days (LD90/30).

FY07 Objectives

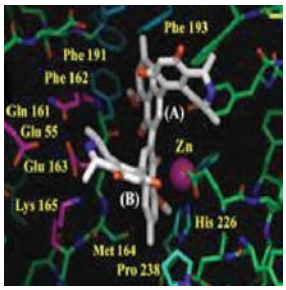
- Establish broad spectrum vaccine strategy to target multiple major intracellular bacteria.
- Begin efficacy and immunology testing of generic bacillus vaccine candidates using genetic immunization or phagosome-lysosome based approaches.
- Continue to evaluate new vaccine technologies, including alphavirus replicons, virus-like particles, adenovirus constructs, and DNA vaccines against selected biothreat agents and toxins.
- Evaluate SEA/B immunogens as next-generation vaccine candidates to produce multivalent anti-SE vaccine.
- Evaluate recombinant methods and expression systems for larger-scale production of recombinant and catalytic Bioscavengers, and develop knock-out mice for use in efficacy animal model systems.
- Complete evaluation of a poxvirus DNA vaccine for duration of immunity.
- Complete technology base studies required for FDA-licensure of ricin and plague F1-V vaccine candidates.
- Evaluate at least 3 radionuclide protective candidates at the LD90/30.
- Determine the dose-reduction factor (DRF) for radiation protection among promising candidates.
- Initial preclinical efficacy study of a promising candidate drug that has a DRF 1.20 or greater in rodents.
- Assess toxicology, pharmacokinetic, drug mechanism, and drug formulation.
- Initiate radiation protection program at Milestone A.

Medical S&T Program – Therapeutics Capability Area

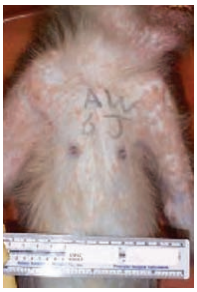
- **Develop FDA-licensable drugs to treat personnel exposed to validated biological and chemical warfare agents.**
- **Develop broad spectrum and rapidly acting therapeutics strategies based upon intervention in common pathogenic mechanisms.**
- **Develop novel antiviral compounds for hemorrhagic fever viruses and poxvirus treatment.**
- **Augment existing nerve agent chemical defense countermeasures with improved neuroprotection and anticonvulsant compounds.**
- **Identify efficacy of novel antibiotic compounds against bacterial threats.**
- **Rescue nerve cells from botulinum toxin exposure.**
- **Transition candidate therapeutics for eye and respiratory injuries due to vesicant agents to advanced development.**

Program Description

The Therapeutics Capability Area conducts basic research and development leading to the development of safe, effective medical treatments and pharmaceuticals against the effects caused by validated biological and chemical threat agents. Emphasis is placed on technologies and approaches leading to the next generation of biodefense therapeutics, including treatments and pharmaceuticals effective against specific agents, and broad spectrum therapeutics effective against entire classes of biological or chemical threat agents. All sub-areas within the Therapeutics area will depend on development of valid animal models and surrogates for human efficacy as necessary preconditions for ultimate FDA approval. Studies in this thrust area are intended to elucidate the underlying genetics and molecular basis for toxin and microbial virulence; host-parasite interactions; pathogenic and toxin mechanisms; and mechanisms of resistance, recovery and repair. Effects are divided into four sub-areas:



Small molecule therapeutic for botulinum toxin


Animal model of Monkeypox required to satisfy FDA animal efficacy rule

- **Bacterial Therapeutics.** These efforts will identify new therapeutic targets that will be employed in the development of advanced or next-generation treatments for bacterial infection and disease. In addition, current FDA-approved drugs and therapeutics are being evaluated for novel new uses against bacterial threat agents.
- **Viral Therapeutics.** These efforts will identify new therapeutic targets that will be employed in development of advanced or next-generation treatments for viral infection and disease. In addition, current FDA-approved drugs and therapeutics are being evaluated for novel new uses against viral threat agents.
- **Toxin Therapeutics.** This thrust area will define toxin-receptor bindings and biochemical activities of toxins and of events cascading from those activities. These efforts will identify new therapeutic targets that will be employed in development of advanced or next-generation treatments for intoxication by biological toxins. In addition, current FDA-approved drugs and therapeutics are being evaluated for novel new uses against toxin agents.
- **Chemical Agent Therapeutics.** This thrust area will delineate the underlying mechanisms of chemical agent-induced injury at subcellular levels, identifying molecular target interaction; and biochemical activities of CW agents and of events cascading from those activities. These studies will identify new therapeutic targets that will be employed in development of advanced or next-generation treatments for intoxication and injury by CWA. In addition, current FDA-approved drugs and therapeutics are being evaluated for novel new roles against CWA.

Government Performers

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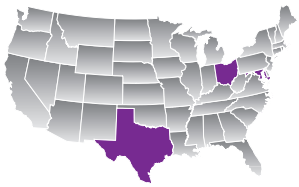
San Antonio, TX



FY04/05 Accomplishments and Objectives

- Demonstrated efficacy of antiviral compounds against smallpox in a new primate model.
- Protection from eye injury from vesicant shown in rabbit model.
- Evaluated immunoglobulin therapies for bacterial threat agents.
- First significant protection shown from Ebola virus challenge observed in a primate model.
- Demonstrated potential for neuronal rescue from botulinum neurotoxins (BoNT) and chemical nerve agents.
- Demonstrated antiviral efficacy of novel synthetic RNAi with potential as a rapid therapeutic development strategy in animal models.

FY06 Objectives

- ID and evaluate lead compounds identified by high-throughput screening for toxin agent inhibitors and antiviral compounds.
- Define and validate essential indicators of therapeutic efficacy in appropriate animal models.
- Test new chemical treatment for nerve agent to replace pyridostigmine bromide.
- Finish testing small molecule candidates for botulinum toxin treatment.
- Validate mediators of shock and toxemia in animal models of viremia and identify targets for therapeutic intervention.
- Further elucidate immune-response to F1-V plague fusion protein to identify potential therapeutic approaches to plague, including cytokine-mediated pathways and heat shock proteins.
- Determine feasibility of re-engineering host cellular response patterns that have been compromised by pathogen-directed shifts (override or trigger apoptosis, up or down regulation of host immune responses, signal transduction agonists/antagonists).
- Develop lead mixtures of human and/or humanized antibodies for passive immunotherapy of botulinum intoxication.
- Identify critical structure/function relationships of filovirus proteins to virus infection, replication, assembly, release, and pathogensis in order to identify targets and potential lead therapeutic compounds.
- Determine military utility of established treatments for intoxication by organophosphate pesticides.
- Evaluation of skin decontamination products that may be applied before and after exposure, and may be used around the eyes and wounds.

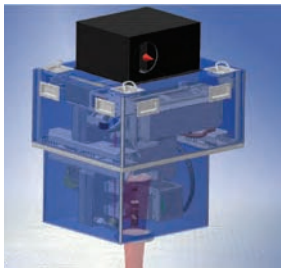
FY07 Objectives

- Evaluate innovative approaches for drug development by re-directing host/pathogen interactions.
- Finalize studies of non-specific immune response factors as an adjunct to plague therapy.
- Define common pathways of intoxication and injury in inhalation models independent of the inhaled toxicant.
- Determine optimal therapy (benzodiazapine alone or in combination with an anticholinergic drug) for potential treatment or nerve agent-induced seizures under all field conditions.
- In vivo testing and proof of concept of modulation of innate immunity as a therapeutic approach.
- Complete studies to evaluate anti-orthopox efficacy of the drug Cidofovir® in NHP models supporting the FDA's animal rule, and provide technical data regarding potential oral proforms of the drug.
- Complete proof of concept and aerobiology studies in animal models with lead compounds shown to have potential as inhibitors of toxins (botulinum, ricin, SEA/B).
- Complete technical data package for FDA approval of a labeled indication of i.v. Cidofovir® for pre- and post-exposure treatment of orthopox virus (Smallpox) infection.
- Efficacy studies of improved oxime in NHP models.
- Determine safety and efficacy of candidate anti-vesicant compounds in appropriate rodent models of percutaneous, ocular, and inhalational exposure.

Physical S&T Program – Detection Capability Area

Program Description

The CB Detection (contamination avoidance) capability area develops CB detectors for standoff applications, biological weapons point identification, lightweight integrated identification, and detection of CB agents in water. In addition, this capability area funds basic research in aerosol science in relationship to detection system issues. Emphasis is placed on early warning applications, which include capabilities for CB reconnaissance, detection and identification. For fixed sites where contamination cannot be avoided or for missions requiring operations in a contaminated environment; reconnaissance, detection, and identification are critical to ensure that forces can assume the optimal protective posture to sustain operations and rapidly identify and decontaminate (if possible, or necessary) affected areas, equipment, and personnel. Sensors for the individual warfighter and systems capable of detecting multiple agents and characterizing new agents are being developed. The heightened operational tempo of future battlespaces demands responsive detection and warning capabilities to reduce force degradation caused by CB contamination. These capabilities—which encompass reconnaissance, detection, identification, and reporting—are critical for force readiness and will continue to be emphasized by the DoD community in the near and far term. Early detection and warning are keys to avoiding CB hazards.



Laser Interrogation of Surface Agents (LISA) uses IR Raman spectroscopy very effectively for rapid detection of surface agents

HISPEC: 8-11 micron high sensitivity single pixel fourier transform infrared spectrometer

- **Standoff Detection.** The goals of this spectroscopy-intensive thrust area are to increase discrimination of threat vs. non-threat agents, reduce the false alarm rate and reduce size, weight, power, and cost.
- **Biological Agents Point Identification.** This thrust area focuses on reducing the time to identify a Biological Agent and the logistical burden, and increasing the understanding of the biological variability of BWA.
- **Lightweight Integrated Identification.** This thrust area integrates CWA and BWA detection technology into a small-handheld system capable of rapid identification of agents with limited or no use of consumable items.
- **Detection of Chemical and Biological Agents in Water.** This thrust area focuses on creation of a field capability for detection of CB in source, purified, and distributed potable water.
- **Aerosol Science.** This thrust area seeks to expand knowledge of novel aerosol sample collection and concentration to facilitate biological agent detection capability.

Government Performers

Edgewood Chemical Biological Center (ECBC)
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Naval Research Laboratory (NRL)
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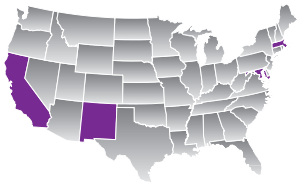
Naval Medical Research Center (NMRC)
Silver Spring, MD

Natick Soldier Center (NSC)
Natick, MA

Los Alamos National Laboratory (LANL)
Los Alamos, NM

Naval Air Warfare Center (NAWC)
China Lake, CA



FY04/05 Accomplishments and Objectives

- Construction and characterization of prototypes to detect and discriminate biological and non-biological agents at a range of 1 km.
- Completed a Milestone A review for Joint Chemical Biological Agent Water Monitor (JCBAWM) Increment 1 – (bio-detection).
- Conducted a trade off study to down-select technology for a lightweight integrated CB detector.
- Completed a prototype development and testing of laser enhanced Raman spectroscopy for detection of the chemical agents.
- Developed a tunable hyper-spectral imager for wide-area chemical detection.

FY06 Objectives

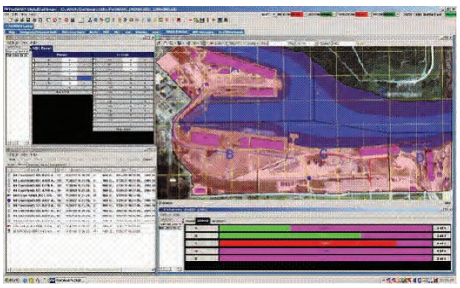
- Transition of Laser Interrogation of Surface Agents (LISA) technology into the CUGR ACTD.
- Transition Biological Portion of Water Monitor; complete the development of the chemical detection portion of the requirements.
- Demonstrate the optimized system performance to detect and discriminate biological agents and transition the technology into the Joint Biological Standoff Detector System (JBSDS).
- Complete the database development of infrared spectral backgrounds suitable for standoff applications (includes imaging techniques).
- Demonstrate an enhanced Fourier Transform Infrared (FTIR) and tunable IR systems with real-time data processing on ground and airborne reconnaissance platforms; transition technology to the Joint Service Light Nuclear Biological Chemical Reconnaissance System (JSLNBCRS) and Stryker vehicle programs.

FY07 Objectives

- Demonstrate the lightweight integrated chem/bio detection technology and transition for insertion into Joint Biological Tactical Detection System (JBTDS) and Reconnaissance Systems.
- Initiate the development of a prototype system based on the enabling technology for surface detection of chemical agents for post-decontamination validation.
- Develop test methodology to evaluate and assess the value of new signatures to reduce the false alarm rate and increase the detection range of standoff detectors.

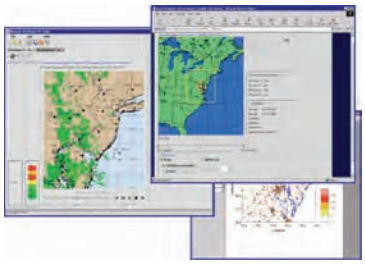
Physical S&T Program – Modeling & Simulation/Battlespace Management Capability Area

Program Description



CB Battle Management Prototype

The Chemical/Biological Modeling and Simulation (Mod/Sim)/Battlespace Management capability area seeks to use automatic collection and fusion of information from all CB defense assets throughout the battlespace and integrate this data with other relevant battlespace information and C4I systems. It will integrate threat information, CB sensor and reconnaissance data, protective posture data, environmental conditions, medical surveillance, and other data pertaining to the CB conditions in the battlespace. This capability will provide rapid dissemination and display of operationally meaningful information to commanders and units at all levels to support decision-making for CB Defense, such as joint force protection, restoration of operational tempo, and casualty care treatment. Warning and reporting S&T provides the hardware and software to connect detection systems into the overall command and control architecture. Additionally, it provides information and analysis capabilities to enhance hazard forecasting and assessment, and operational decision-making.



High resolution model

Mod/Sim capabilities will provide situational awareness and hazard warning and prediction, and allow modification of operations. In the future, Mod/Sim capabilities will provide warfighter and decision-makers at every level of command with the ability to analyze courses of action immediately prior to, or in concert with, response objectives. In addition, Mod/Sim aids in the assessment of Joint and Multi-Service doctrine, materiel development, and equipment design (i.e., Simulation Based Acquisition). CB Mod/Sim also supports warfighter training and the training of battle staffs using larger conflict simulations, and can perform support analyses of CB defense operations within the context of larger military operations. These efforts also support simulation-based acquisition in the development of critical CB defense capabilities.

Government Performers

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Aberdeen Proving Ground, MD

Naval Surface Warfare Center (NSWC), Crane Division
Crane, IL

National Oceanic and Atmospheric Administration (NOAA)
Oak Ridge, TN

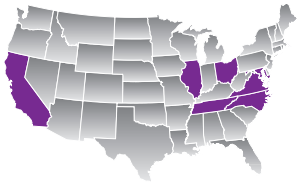
Institute for Defense Analysis (IDA)
Arlington, VA

Defense Threat Reduction Agency (DTRA)
Alexandria, VA

Defense Science and Technology Laboratory
Porton Down, UK

Lawrence Livermore National Laboratory (LLNL)
Livermore, CA

Army Research Office (ARO)
Research Triangle, NC



FY04/05 Accomplishments and Objectives

- Provided visualization of network sensor responses under the auspices of Joint Warning and Reporting Network (JWARN).
- Demonstrated and initiated transition of the Simulation, Training, and Analysis for Fixed Sites (STAFFS) CBW impact model to Joint Operational Effects Federation (JOEF) and conducted independent validation and verification on the model.

FY06 Objectives

- Transition mobile forces modules to Joint Operational Effects Federation (JOEF).
- Transition mobile force capability and chemical hazard estimation method and risk assessment tools (CHEMRATS) Block II to JOEF.
- Transition initial sensor data fusion algorithms to JEM.

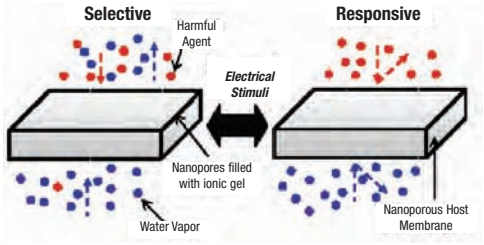
FY07 Objectives

- Complete development of modules for JEM for high altitude, urban, littoral and coastal environments, and indoor scenarios.
- Transition fully Netcentric Enterprise Systems (NCES) compliant modules of all relevant Joint Program Manager for Information Systems (JPM-IS) capabilities and applications to JWARN.
- Develop certification lab capability for JWARN related sensors and nodes.

Physical S&T Program – Protection Capability Area

Program Description

There are two types of physical protection, individual and collective, which are managed in four thrust areas: clothing and masks (individual), air purification and shelters (collective). When early warning is not possible or units are required to occupy or traverse contaminated environments, protection seeks to preclude exposure to CB agents as well as toxic industrial chemicals and thus provide continued operational capability in the CB contaminated environment.



Selective and responsive nanopore-filled membranes as breathable barriers

- Individual protective equipment includes protective masks and clothing. Protective masks with reduced respiratory stress, improved protection, compatibility with weapon sighting systems, and reduced weight and cost are being developed. The goal of the individual protection area is to reduce the physiological burden associated with wearing protective equipment while maintaining, and improving the already high level of protection against CB warfare agents and radiological particles. Individual protection equipment must also provide protection against emerging threats, such as non-traditional agents (NTA) and toxic industrial chemicals (TICs). To achieve these goals, key physiological performance requirements for the design and evaluation of clothing and respirators are being established.
- Collective protection equipment consists of various types of protective filters, entry/exit portals, and air handling devices that provide purified air to the protected toxic free area over a wide range of applications, including transportable shelter systems, fixed sites, and mobile platforms. The goals of the collective protection area are to (1) reduce the weight, size and power requirements of CP systems, (2) reduce the logistical burdens associated with the maintenance of CP filters, (3) improve protection capabilities against current and emerging threat agents, including TICs, and (4) improve the deployability of transportable shelter systems. To achieve these goals, improvements to system components (including transportable shelters) are being investigated along with improvements to the current vapor and particulate filtration media.

Government Performers

Edgewood Chemical Biological Center (ECBC)
Aberdeen Proving Ground, MD

Natick Soldier Center (NSC)
Natick, MA

Naval Surface Warfare Center (NSWC), Dahlgren Division
Dahlgren, VA

Air Force Research Laboratory (AFRL)
Tyndall AFB, FL

Office of Naval Research (ONR)
Arlington, VA

Army Research Office (ARO)
Research Triangle, NC

FY04/05 Accomplishments and Objectives

- Demonstrated self-detoxifying material chemistries for G-nerve agents, VX, and HD in electrospun fibers.
- Developed and tested advanced CB shelter materials and prototype shelter system components.
- Fabricated and demonstrated End-of-Service Life Indicators (ESLI) filter concept prototypes for key target agents (i.e., GB, HD, CK, AC and CG).
- Developed new sorbents and sorbent combinations with a much broader capacity for removing TICs.

FY06 Objectives

- Transition ESLI to the Joint Service General Purpose Mask (JSGPM).
- Transition improved absorbents for TIC protection to JSGPM.
- Transition improved NTA/aerosol protection to Joint Service Lightweight Integrated Suit (JSLIST).

FY07 Objectives

- Demonstrate an integrated self-detoxifying garment with advanced aerosol protection and advanced closures.
- Identify technologies to indicate the residual life, or end of life of protective garments.
- Complete high priority applications for the Advanced Air Purification System Model and population of databases using data in literature, existing system performance and module models.
- Develop new technologies to mitigate the impact of NTAs on clothing materials, components, and systems.

Physical S&T Program – Decontamination Capability Area

Program Description

The CB Decontamination capability area develops technologies for the detoxification and rapid restoration of contaminated personnel, materiel, and essential operation areas, subsequent to chemical or biological attack. When contamination cannot be avoided, personnel and equipment may need to be decontaminated to reduce, eliminate or neutralize hazards after CB weapons employment. Decontamination systems provide a force restoration capability for units that become contaminated. The payoff from enhanced decontaminants and decontamination systems will allow forces to reconstitute personnel and equipment more quickly to increase combat efficiency and lessen logistic burdens.

"Decon Green" an environmentally-friendly decontaminant based on commercial chemicals to replace DS2/DF100

Suspension of highly sorbtive/reactive particles compatible with sensitive equipment material surfaces

In the near and midterm, DoD continues to research new multi-purpose decontaminants. New technologies, such as reactive decontaminating systems, oxidative formulations, and enhanced sorbents, which may offer operational, logistical, cost, safety, and environmental advantages over current decontaminants. In the far term, the Services are seeking non-aqueous decontamination systems to provide for sensitive equipment decontamination at mobile and fixed sites. Additionally, there is interest and exploratory research in coatings, which can reduce or eliminate the necessity of manual decontamination.

- Decontamination, Process Fundamentals thrust area focuses on basic science and fully characterizing the reactions that occur during the decontamination process; analytical and predictive modeling; verification of post-decontamination safety; and maximizing decontamination efficacy by manipulating delivery, dispersion, and/or application methods.
- Decontamination, Solution Chemistry thrust area focuses on developing a single solution that is reactive, non-corrosive, and environmentally benign; an effective broad-spectrum chemical and biological decontaminant; and suitable for use on a multitude of surfaces.
- Decontamination, Solid Phase Sorbents thrust area focuses on developing solid phase reactive materials for use as sorbent beds to clean up mixed aqueous/organic solvents and particulates that absorb and neutralize contaminates that can be either readily removed after use or do not present a dirty particulate problem and are suitable for use on a multitude of surfaces. These materials, mixes, and systems will effectively remove or neutralize greater than (>) 99.9% of toxic material and/or sieve or remove 0.1 to 10 micrometer particles for infective agents and other biological agents or materials from contaminated services and ensure rapid, effective force reconstitution. The goal for this thrust area includes compatibility with sensitive surfaces including electronics.

Government Performers

Edgewood Chemical Biological Center (ECBC)
Aberdeen Proving Ground, MD

Naval Surface Warfare Center (NSWC), Dahlgren Division
Dahlgren, VA

Army Research Office (ARO)
Research Triangle, NC

FY04/05 Accomplishments and Objectives

- Developed a reactive wipe system for sensitive equipment surfaces.
- Evaluated enhanced oxidative nanoparticles as reactive sorbents for both chemical and biological decontamination.
- Evaluated portable approaches for decontaminating small sensitive surfaces for use in the interior of vehicles and aircraft.
- Demonstrated an oxidative formulation with existing applicator systems as a potential replacement to standard fielded decontaminating solutions.

FY06 Objectives

- Develop an improved decontaminant for the use on aircraft and other sensitive exteriors for transition to the Joint Service Family of Decontamination Systems (JSFDS) program.
- Conduct survey to identify new approaches to solid phase (reactive sorbent) decontaminants.
- Initiate laboratory scale advanced sorbent testing on nanoparticulate decontaminant products provided by industry.
- Initiate laboratory research to characterize the reactions that occur between VHP and CIO2 when the gases come into contact with metal, metal-oxide, and polymeric surfaces and to determine the decomposition pathways for surface-bound agents and simulants when they are exposed to vaporous decon formulations.

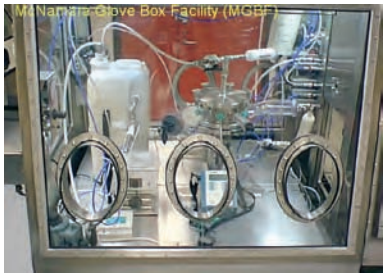
FY07 Objectives

- Complete development of reactive impregnated solvent based wiping systems.
- Transition reactive solvent based wiping systems to the Joint Platform Interior Decontamination (JPID).
- Complete the development of an improved filtration system for fluorinated ethers solvent cleaning systems and transition to the Joint Service Sensitive Equipment Decontamination System (JSSED) program as a product improvement.
- Develop initial algorithms for decontamination analytical and predictive modeling on candidate decontaminant efficacy, material compatibility, and safety.

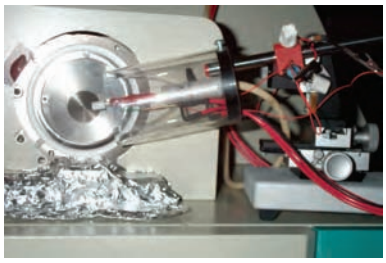
Physical S&T Program – Threat Agent Science Capability Area

Program Description

The Threat Agent Science (TAS) capability area seeks to identify and address gaps in the understanding of CB threat agents, to include their physical, chemical, environmental stability and transport, and toxicological properties. The purpose of these studies is to facilitate detection, protection, and decontamination countermeasures, to improve warfighter decision support tools, and to provide a sound scientific basis for doctrine and policy development. TAS is comprised of four major thrust areas and a number of subordinate areas of emphasis.



Test Apparatus for Non-Traditional Agents (NTA)



Direct Analysis in Real Time (DART) provides rapid methodology for studying fate of agents on surfaces

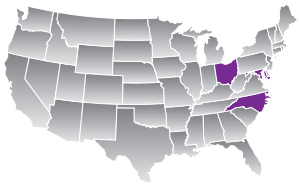
- Science Information Support (SIS) will identify warfighter threat agent science informational needs and assess the current and projected CB threats. Development of this area is done, in coordination with the Joint Requirements Office (JRO) and the Joint Combat Developer, with policy and planning stakeholders to prioritize TAS work based on threat analysis and user needs.
- Threat Agents and Simulants will expand our knowledge of current and emerging threat agents and their chemical and physical properties, and develop new simulants to improve field-testing of technologies.
- Environmental Behavior will develop detailed understanding of the evolution of chemical and biological warfare agents following their release into the environment.
- Physiological Response is a joint medical and physical science and technology area to enhance our understanding of the physiological effects of sub-lethal exposures to classical and novel threat agents by operationally relevant routes of exposure.

Government Performers

Edgewood Chemical Biological Center (ECBC)
Aberdeen Proving Ground, MD

Air Force Research Laboratory (AFRL)
Wright Patterson AFB, OH

Army Research Office (ARO)
Research Triangle, NC



FY04/05 Accomplishments and Objectives

- Initiated efforts to characterize the chemical and physical properties of emerging threat agents.
- Refined operational human health risk assessment for those agents suitable for integration into Operational Risk Management processes.
- Developed evaporation and liquid contact models and integrated them into the Joint Effects Model (JEM).
- Conducted surface evaporation studies of thickened Soman (GD), VX, and HD on concrete and asphalt.

FY06 Objectives

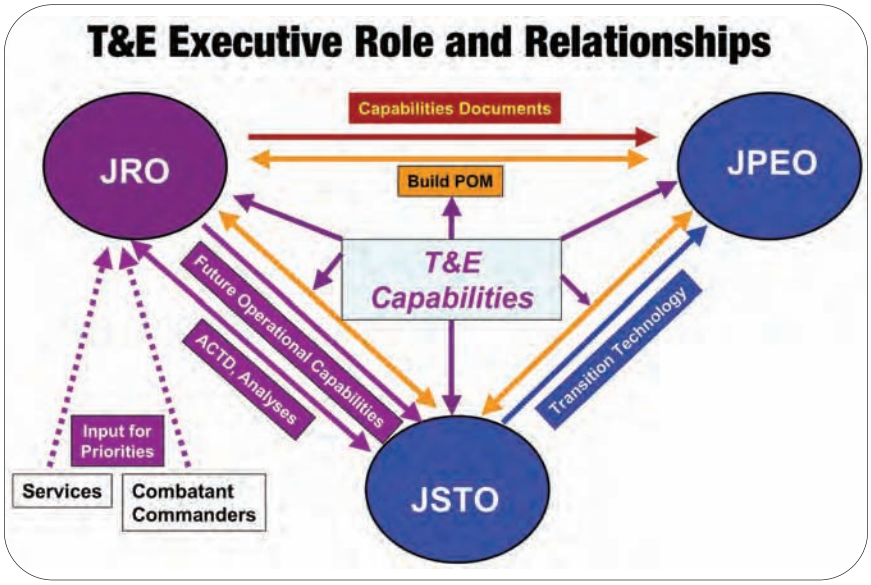
- Integrate secondary evaporation and agent/inert substrate models into JEM and JOEF.
- Complete lower-level operational effects nerve agents (VX) studies.
- Initiate effort to gather agent fate data for emerging threat agents and surfaces of interest.
- Develop, validate, and correlate agent simulants to support test and evaluation applications.

FY07 Objectives

- Initiate effort to gather agent fate data for emerging threat agents and surfaces of interest.
- Initiate Defense Technology Research program to address the operational risk to military personnel when exposed to selected traditional chemical warfare agents as well as non-traditional threat agents by contact and inhalation routes.

Test and Evaluation (T&E)

The reorganization of the Chemical Biological Defense Program (CBDP) to create centralized functions included the creation of the CBDP T&E Executive. The role of the T&E Executive is based on the integral nature of T&E activities throughout the CBDP for non-medical systems. During requirements formulation, data from experimentation are used to define new capabilities needed. During technology development, research includes bench level and demonstration testing to obtain data for evaluation of technology maturity. During acquisition, T&E is expanded to test full systems in multi-phased Developmental Testing (DT) and multi-service Operational Testing (OT). Thus T&E supports all phases in the life cycle of a system (see figure, CBDP Roles and Relationships, below). The T&E Executive is responsible for establishing standardized test processes and procedures early that are used to build comparable and complementary data through all phases.



The T&E Executive also manages T&E infrastructure to ensure that T&E is conducted for CBDP systems and is responsible for establishing test standards, processes, and procedures. T&E infrastructure is defined as those facilities that support developmental, operational, and related T&E, and does not include Science & Technology (S&T) laboratory infrastructure. The T&E Executive with input from the T&E community and acquisition community defines T&E requirements, the levels and types of test capabilities required for adequate testing. The Project Director for Test Equipment, Strategy, and Support (PD-TESS) was created in January 2005 to acquire those capabilities.

The T&E Executive was formed in 2003 and works closely with the S&T and acquisition community to ensure adequate testing and to support OSD T&E oversight. The T&E Executive participates in and/or leads Integrated Product Teams (IPTs) and Working Groups (WGs) as required to expedite approval of T&E Master Plans (TEMPs) and other acquisition documents. The T&E Executive focus is on these current ongoing programs, but also on ensuring adequacy of testing for the future. A key T&E Executive role is to establish T&E requirements based on input from the T&E, S&T, and acquisition community stakeholders.

In FY 05, the T&E Executive conducted a 5-month effort to identify T&E shortfalls in current capabilities. A series of meetings was held jointly among T&E and program manager representatives for each commodity area to discuss currently available capabilities and what capabilities were needed for future and improved T&E. Two primary objectives were addressed:

1. to improve operational realism of testing, and
2. to provide T&E capabilities for evolving threats.

Figure below depicts the FY 05 status of available T&E capabilities and methodologies.

T&E Facilities

Dugway Proving Ground
UT

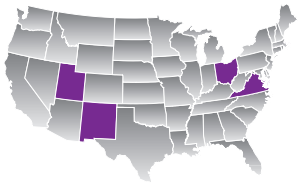
Naval Surface Warfare Center
Dahlgren, VA

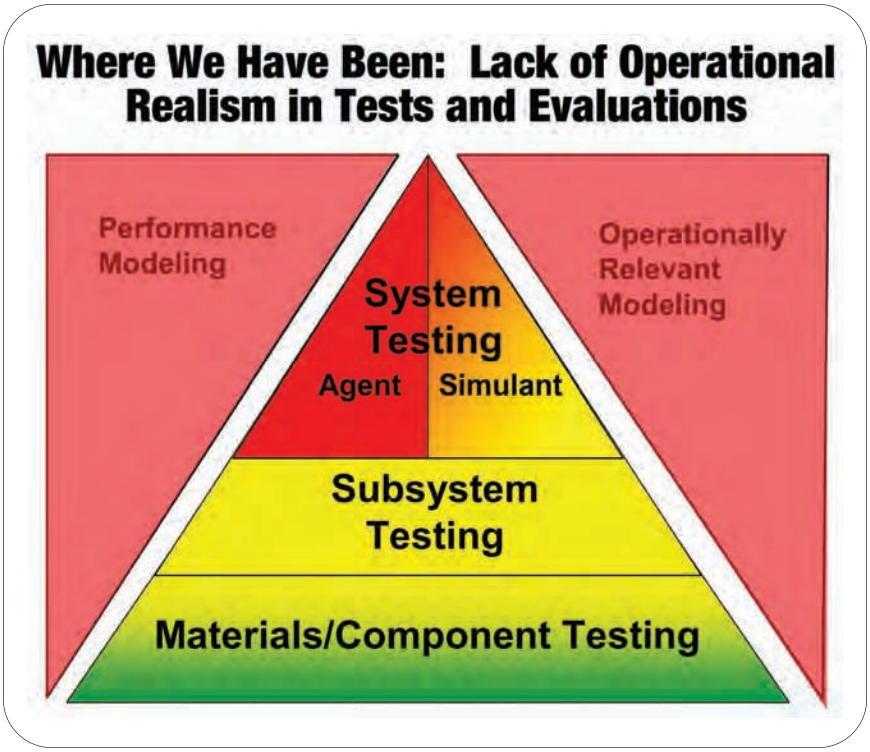
U.S. Air Force Operational Test & Evaluation Center
Albuquerque, NM

Air Force Research Laboratory
Dayton, OH

Marine Corps Operational Test & Evaluation Activity
Quantico, VA

Operational Test & Evaluation Force
Norfolk, VA





Many valid materials/component level tests are available; however, there are severe shortfalls in full system tests, both with live agents and with simulants that are meaningful in terms of live agent system performance. Also, it is currently not possible to establish the links among the levels of tests. Basic science data and methodologies are not available to characterize the interactions of numerous variables which would allow prediction of performance from one level to another, and support the validation and use of modeling and simulation (M&S). Significant efforts are required to remedy these shortfalls to provide the series of tests integrated with M&S approaches which together constitute adequate testing. A robust T&E program for CBD systems requires a related continuum of tests from early Research and Development (R&D) to DT to OT, with appropriate use of M&S to tailor testing according to greatest need and critical environment for each system under test.

The T&E budget submission for the FY 06–11 Program Objective Memorandum (POM) supports those T&E capabilities required to establish that continuum of related tests and evaluation tools and to improve operational realism of tests and ability to address evolving threats. The T&E capabilities projects needs were aligned with JPEO acquisition programs in priority order IAW the JRO Baseline Capabilities Assessment (BCA), as were the technology insertions and transition demonstrations. Thus, the CBDP budget submission for the FY 06–11 POM is an integrated S&T, T&E, and acquisition budget and establishes the baseline and process for all future CBDP budget submissions. By budgeting for not only the programs, but the T&E capabilities necessary to test them, the programs are planned as executable programs. The early definition of T&E requirements that is critical to establishing executable programs and planning for investments. Definition of basic key evaluation tenets also forms the baseline for building early T&E strategies for each program and TEMP.

T&E requirements are based on evaluation needs. Investment planning must also consider capabilities of existing T&E facilities and must address the location of future T&E capabilities. The evaluation tenets that were used as the basis for the FY 06-11 POM are described below along with discussion of T&E facilities capabilities and focus.

Key Evaluation Tenets

Maximum use of Design of Experiments (DOE) approaches will be used. This requires the use of common test processes and procedures starting in S&T. Evaluations require a related continuum of tests from early R&D to DT to OT, with appropriate use of M&S.

The goal of evaluation is to establish the capabilities and limitations of each system in terms of live agent system performance with respect to realistic threat environments. Since it is not possible to conduct U.S. outdoor live agent tests, and since many chamber tests of large CBD systems and platforms cannot fully replicate the outdoor environment, a combination of simulant testing outdoors, live agent testing in chambers, and appropriate M&S and analysis techniques are used. All M&S and use of simulants must be validated by the developer and accredited by the user of the M&S/simulant.

Validation, accreditation, and utility of simulant data for evaluations are based on characterization of system under test in terms of agent performance related to system simulant performance. Physical properties of simulants are analyzed to identify types of simulants to test; however, actual system testing with both agents and simulants are required to validate the degree and nature of the simulant representation of each agent. Multiple simulants may be required to represent one or more agents; different simulants may be required for different technologies or performance aspects of each system under test.

Independent government DT/OT is required to establish full system performance: capabilities, limitations in terms of effectiveness and suitability. Contractor or PM DT data can be used to support evaluations if planned as part of the overall test program with evaluator involvement. Operational evaluators will be involved early in DT planning, so that maximum use of DT data is possible. DT will be planned to represent realistic threats and operational environments to the fullest extent possible. In order to present a realistic threat environment, the Concepts of Operations (CONOPS) and definition of threat parameters are input into T&E planning. DT and DT/OT data are used to establish readiness of the system to proceed to Low Rate Initial Production (LRIP) and Initial Operational Test & Evaluation (IOT&E). IOT&E requires production representative test systems. All test events are planned for and funded under each individual acquisition program.

DT and DT/OT data include live agent component and system data. Future capabilities will develop the relationships among these data and expanded analytical methodologies, so that M&S can be used to predict performance and maximize the chance of successful test results while reducing cost. Evaluation of system effectiveness, capabilities, and limitations is primarily based on full system live agent performance. When simulants are used for OT and to increase the types of environments and conditions that can be tested, the relation of live agent performance and simulant performance must first be established for that particular system and technology. This is critical for valid interpretation of the meaning of simulant data for that system.

Evaluations will include identifying limitations of testing and addressing these “So What?” questions:

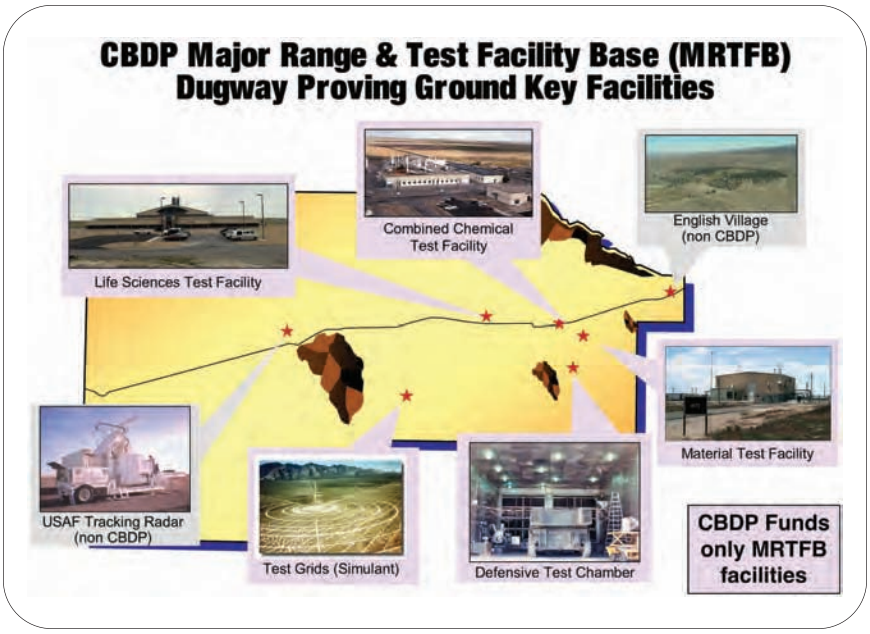
1. What are the impacts of system shortfalls?
2. Is the capability demonstrated a militarily useful increment of capability?
3. What improvements are required to provide a militarily useful increment of capability?

Evaluators require full definition and understanding of how each system works, including hardware and software. Critical elements of agent system performance must be analyzed in order to address the “So What?” questions above. This analysis is based on all data: materials, components, and system data. Thus, materials and components data are supporting data for system data and system evaluations.

T&E Facilities and Capabilities

All Services conduct various types and phases of CBD T&E. Each Service has R&D laboratory resources (including Army: Edgewood Chemical and Biological Center (ECBC), Natick Soldier Center (NSC), and Army Research Laboratory (ARL), Air Force: Air Force Research Laboratory (AFRL), and Navy and Marines: Naval Surface Warfare Center (NSWC) Dahlgren and Naval Air Warfare Center (NAWC)). These labs are not considered part of CBDP T&E infrastructure but they support T&E infrastructure and acquisition program DT processes. Thus, a core R&D-level test capability is required to be established in the labs which utilize the same common test processes and procedures that will be used in follow on phases of DT. T&E technologies and capabilities developments should be planned as partnering efforts among multi Service R&D labs and DT and OT organizations, so that these common test procedures are jointly established and "owned" by both labs and testers of all Services. T&E technologies development and small scale R&D test capabilities will include upgrades in lab facilities as required. These upgrades in R&D facilities to support DT will be acquired under the auspices of the CBDP, but will be sustained as part of the R&D infrastructure. Examples of this include BL-3 labs at ECBC and Dahlgren, and simulant testing at ECBC, NSC, Dahlgren, and AFRL.

The CBDP funds a Major Range and Test Facility Base (MRTFB) at Dugway Proving Ground (DPG) to conduct DT, DT/OT, and support OT. The figure below depicts the MRTFB facilities. The MRTFB is located within the Army T&E Command (ATEC). The MRTFB is funded under the DW6 program; see DPG Program Description section below.

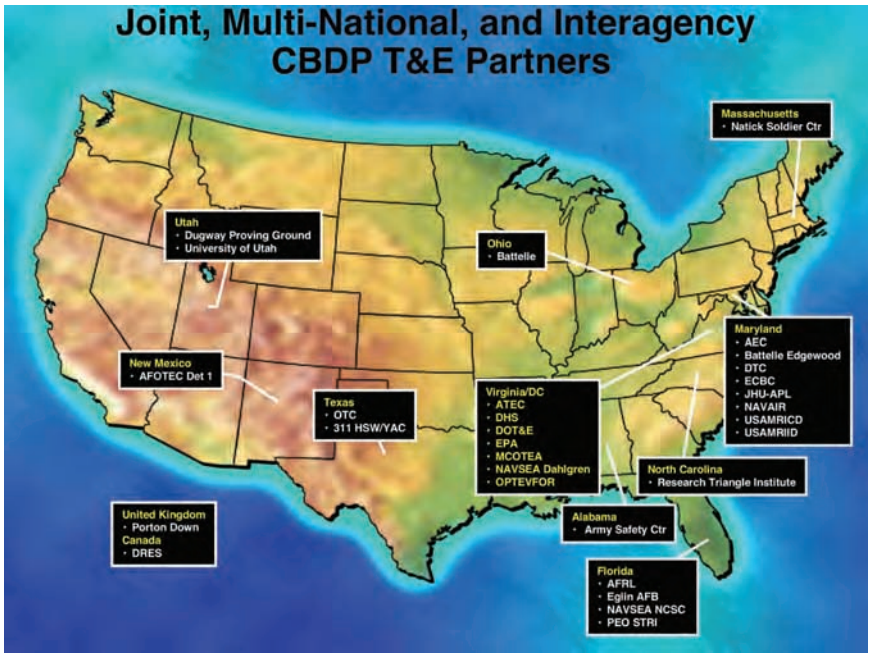


ATEC, the Air Force Operational Test Center (AFOTEC), the Navy Operational T&E Force (OPTEVFOR), and the Marine Corps Operational T&E Activity (MCOTEA) all conduct Operational Testing of CBD systems. Multi Service T&E Teams are formed to plan an integrated series of tests to support the overall system evaluation, which includes assessments by each Operational Test Activity (OTA) regarding effectiveness and suitability of the system for each respective Service's mission(s).

NSWC, NAWC, and Eglin Air Force Base have DT organizations and T&E capabilities which are used to support CBD systems and which can be used to include in testing USN and USAF missions and platforms, user representatives, and additional environments.

The MRTFB is the primary source and CBDP investment target for DT and DT/OT. Other Services DT and OT capabilities developments should be planned as partnering efforts among multi Service DT and OT organizations, so that these common test procedures are jointly established and accepted by testers of all Services. T&E capabilities development will include upgrades in DT and OT facilities and instrumentation at the MRTFB and at other DT and OT organizations as workload indicates is necessary and when it is cost effective. These upgrades in non MRTFB facilities were acquired under the auspices of the CBDP, but will be sustained as part of that organization's current infrastructure and O&M costs. Similarly, upgrades in facilities funded outside the CBDP will be sustained as part of that organization's infrastructure and O&M costs, and not by the CBDP.

Many systems require full system testing in multiple geographic and mission environments. A core system performance test will be planned with excursions to address additional environments in a related fashion. The same procedures and instrumentation will be used among environments tested, so that differences among data can be attributed to the environment and not confounded with test procedure/measurement differences. Improved T&E capabilities for outdoor simulant testing will be planned as an integrated set of instrumentation and methodologies. Challenge generation and characterization methodologies and instrumentation are required as a core capability of the MRTFB. Supplemental challenge generation and characterization capabilities by means of transportable equipment suites are required so that diverse geographic and mission environments can be tested using the same procedures across all environments, in order to yield comparable and combined data sets.

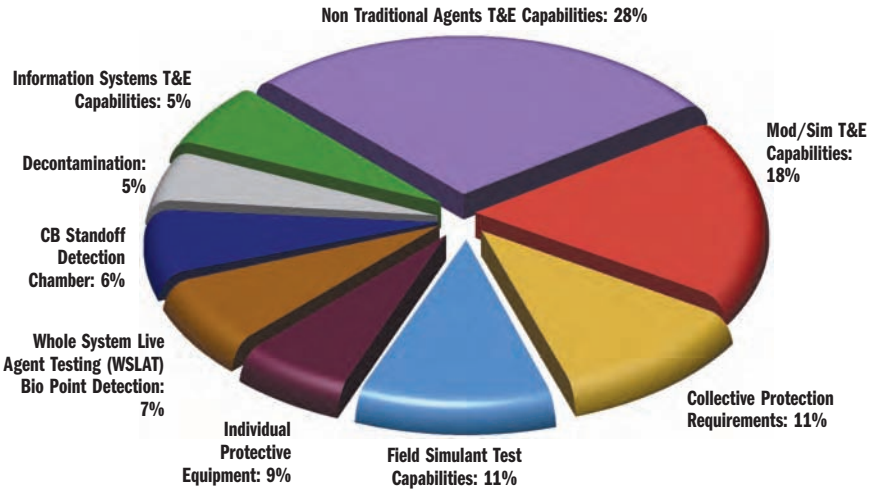


The figure above shows the breadth of the relationships of T&E nationwide and worldwide. The Chemical Biological Defense Program is supported by Service Operational Test Activities headquartered in New Mexico and Virginia, which have sub-elements in the additional states of Florida, Hawaii, Maryland, Texas, and Utah. The T&E Executive coordinates the efforts of the test organizations in defining T&E infrastructure and requirements necessary to support our programs. The T&E Executive also is responsible for standard T&E methods, processes and procedures, which we are working to leverage current methods from any source, including our partners in the United Kingdom and Canada, and to develop and standardize test procedures with industry and other agencies.

The focus of the T&E budget submission for the FY 06–11 POM as integrated with S&T and acquisition programs is to address the two objectives of improving operational realism of tests and the ability to address evolving threats. T&E capabilities are planned to meet these two objectives and remedy the shortfalls as discussed above by means of acquiring a technologically advanced and methodologically sound continuum of related tests and evaluation tools that include all functional areas, Sense, Shield, Shape, and Sustain. In addition, several key T&E needs (NTAs, simulants, threat agent science, and M&S) across all functional areas will be addressed by means of umbrella programs which include efforts to support all functional areas. The figure below shows the relative funding profiles for FY 06 efforts by functional and cross areas.

The T&E Executive is an integral part of the CBDP and oversees and manages T&E activities, processes, and infrastructure for non-medical systems. Current T&E infrastructure is severely lacking in terms of system tests and the data and methodologies required for predictive M&S. The CBDP FY 06–11 POM includes T&E infrastructure needs to remedy those shortfalls and to address the primary objectives of improving operational realism of testing, and providing T&E capabilities for evolving threats. These new T&E capabilities are funded within JPEO and in JSTO programs and will be integrated by PD-TESS. The CBDP FY 06–11 POM is an integrated budget across S&T, T&E, and acquisition, thus establishing executable programs. The elements of T&E infrastructure funding (separate from JPEO and JSTO programs) can be seen in the DW6 DPG MRTFB program and in the MS6 Management line for early involvement of OTAs and T&E Executive Mission.

FY06 T&E Capabilities Funds by Functional and Cross Areas



Joint Requirements Office Doctrine and Training (JRO DT)

- **Development, coordination, and integration of Joint Chemical, Biological, Radiological, and Nuclear (CBRN) defense capability requirements**
- **Development/revision of medical and non-medical CBRN defense Multi-Service Tactics, Techniques, and Procedures (MTTP), Joint Doctrine and Tactics, Techniques, and Procedures (JTTP)**
- **Support of current and planned CBRN defense studies, analysis, training, exercises, and war games**

Program Description

The activities of this project directly support the Joint Service Chemical and Biological Defense Program; in particular, the development of Joint Chemical, Biological, Radiological, and Nuclear (CBRN) defense capability requirements and the improvement of CBRN defense related doctrine, education, training, and awareness at the Joint and Service levels.

Concepts, Studies, and Analyses	Mission Area Integration	Protection and Consequence Management	Materiel Requirements	Doctrine, Training, and Readiness
• Develop operational concepts • Conduct requirements analysis (CBA focused) • Participate in experiments, demos, ACTDs • Oversee Joint Combat Developer for Experimentation • Develop/manage studies supporting requirements for the CBDP • Joint Service CBRN S&T and M&S POC • Coordinate threat capability assessments	• Develop mod plan, operational capabilities, and priorities • ICW JPEO lead POM efforts, develop Strategic Plan • Coordinate response to external studies (GAO, DSB, DoD IG, etc.) • COCOM liaison • Interdiction and elimination lead • Resource analysis (to include coordination with JPEO, DATSD(CB), DTRA, Services)	• Develop CBRN consequence management (CM) requirements to protect DoD assets • Facilitate the integration of CBRN with E • Interface with DHS through ASD(HD) to coordinate National CBRNE incident response and mitigation requirements with DoD efforts • Liaison for Services/ COCOMs/USCG integrated CBRNE force protection and IM efforts	• Develop CBRND materiel requirements in passive defense, CoM, AT/FP, and HLS • Manage materiel capabilities documents as directed by the JROC/JCIDS • Lead ICTs to identify Service needs and develop JCIDS products; staff in KM/DS and seek approval through FCB/JCB/JROC • Advocate COCOM and Services' needs with PMs, T&E, and S&T organizations	• Coordinate logistics and sustainment issues, participate in DoD CBRND operational readiness issues, monitor LD/HD CBRN assets • Coordinate non-medical multi-service doctrine and training issues with USA CMLS and Service doctrine centers • Coordinate medical multi-service doctrine and training issues with USAMEDD and Service doctrine centers

FY04 Accomplishments

- Developed Joint Chemical, Biological, Radiological, Nuclear and High-Yield Explosive (CBRNE) defense Concept of Operations (CONOPS) for installation protection and emergency response. Identified priority lists for 200 installations and facilities worldwide to receive improved CBR protection capabilities. Developed CBRNE standards for DODI 2000.16, Antiterrorism Standards. Completed the Urgent Requirements Capabilities Document (URCD) for Project Guardian acquisition (e.g., installation protection, emergency response, civil support). This facilitates the acquisition of Commercial off-the-shelf (COTS)/Government off-the-shelf (GOTS) protective capabilities for the first 35 of 200 installations worldwide.
- Developed a web-based Requirements tracking and procurement planning tool that is integrated with an existing acquisition tool.
- Provided analyses to define capability gaps, capability needs and approaches to provide those capabilities within CBRN defense across all DoD mission areas. Facilitated the development of joint architectures, joint operational concepts, and supporting technical annexes.
- Formalized the Joint CBRN Capabilities Improvement Initiative Team, (CIIT) a joint venture between the Joint Requirements Office and United States Joint Forces Command (USJFCOM), J-7. The CIIT team has participated in DETERMINED PROMISE 04, AGILE RESPONSE 04 and ARDENT SENTRY 05. Coast Guard Liaison Officer (CGLO) actively supported the JRO-CIIT by observing/evaluating CG CBRN participation in exercises.
- Continued to support the integration of CBRN defense considerations during the revision and development of selected joint doctrine in Combating WMD, CBRNE Consequence Management, Homeland Security and Universal Joint Task list revision.

- Provided assistance in developing and enhancing CBRN defense curriculum and war-gaming at intermediate and senior level Joint and Service Colleges and Senior Service Non-Commissioned Officer Academies. Provided CBRN defense related training support to Combatant Command staffs, services and the United States Coast Guard (USCG).
- Supported integrated CBRNE incident management efforts (e.g., emergency response on or near DoD installations, civil support in CONUS and OCONUS, and DoD support to US government lead federal agencies).
- Continued to support the revision and development of CBRN defense medical and non-medical Multi-service Tactics, Techniques and Procedures (MTTPs). MTTPs completed this year were NBC Vulnerability Assessment, Biological Surveillance, NBC Reconnaissance, and Potential CB Agents and Compounds.
- Provided instructor support for three Joint Senior Leaders' Courses (JSLCs). Course improvements were adding a classified intelligence brief, Homeland Security presentation, and garnering interagency attendance.
- Provided subject matter expertise to SOLO CHALLENGE, JOINT AIR LAND SEA SIMULATION supporting Air, Army, Navy War Colleges and Industrial College of the Armed Forces.

FY05/06 Objectives

- Develop campaign strategy for Joint Combat Developer (JCD) experiments to assist in the closing of capability gaps with CONOPs/TTPs. Provide assistance to the development of CBRN-related experiments to integrate into JFCOM's Experimentation Campaign.
- Provide assistance in developing and enhancing CBRN defense curriculum and war-gaming at intermediate and senior level Joint and Service colleges and senior Service non-commissioned officer academies. Provide CBRN defense related training support to Combatant Command staffs, services and the USCG.
- Refine Joint CBRNE defense concepts of operations for installation CBRNE protection and emergency response as lessons are learned from the initial Installation Protection Program (IPP) installations and facilities.
- Continue to support the revision and development of CBRN defense medical and non-medical MTTPs: (1) CBRN Defense of Theater Fixed Sites, Ports and Airfields; (2) CBRN Consequence Management, (3) NBC Defense Operations (4) NBC Protection (5) Treatment of Chemical Agent Casualties, (6) Health Service Support in CBRN Environment and (7) Medical CBRN Homeland Defense.
- Support the integration of CBRN defense considerations during the revision and development of selected joint doctrine and JTTPs.
- Provide assistance in the implementation of required solutions of CBRN defense in Combatant Command's modeling and simulation tools.
- Manage conclusion of three ongoing studies: E2C2, Challenge levels, and Low Level Toxicity.
- Continue support to Project Guardian acquisition (e.g., installation protection, emergency response, civil support); extend the Urgent Requirements Capabilities Document (URCD) or pursue new JCIDS documentation as appropriate; and improve project guidance as lessons are learned from project fielding.
- Continue support and facilitate an increase in the overall scope of the Joint Senior Leaders Course (JSLC).
- Provide assistance to CUGR (CBRN Unmanned Ground Reconnaissance) ACTD (Advanced Concept and Technology Demonstration) and assist in completion of RESTOPS (Restoration Operations) ACTD.
- Support refinement and increase functionality of the Joint Service Chemical Biological Information System (JSCBIS) Requirements Module procurement-planning tool. Implement approved capability document archive integrated with the requirements module in JSCBIS.
- Assist National Defense University Center for the Study of WMD in the effort to standardize Combating WMD curriculum and integrate WMD education within professional military education.
- Continue Capability Improvement Initiative Team CBRN support to COCOM exercise and training programs.
- Integrate worldwide CBRNE incident management efforts on or near DoD installations, CONUS and OCONUS.
- Provide assistance in developing and implementing the Strategic Plan for Medical CBRNE Training.
- Continue to provide guest speaker support to several intermediate and senior level Joint and Service Colleges in the area of combating WMD and CBRND. Conduct "CBRN/WMD Awareness" Course for USCG Headquarters 05/06's (Program Managers/Operational Commanders)
- Complete MOA between DoD and DHS/USCG on CBRN Support to USCG.
- Incorporate CG CBRN Equipment needs within CBDP for future assets ("Deepwater" Program).

Homeland Defense

Weapons of Mass Destruction-Civil Support Teams (WMD-CST)

- **Equip WMD-Civil Support Teams (WMD-CST) and USAR Reconnaissance decontamination teams for response to a CBRN event**

Program Description

This program funds the acquisition of CBRN equipment as outlined in the Defense Reform Directive #25 (DRID #25) for Weapons of Mass Destruction-Civil Support Teams (WMD-CSTs). This effort will allow selected National Guard and Reserve Component units to respond to and contain the effects of CBRN incidents in this country.

The program also funds the design, enhancement, and testing of the Analytical Laboratory System (ALS) and the Unified Command Suite (UCS) for the WMD-CSTs. The ALS provides advanced technologies with enhanced sensitivity and selectivity in the detection and identification of Chemical Warfare (CW) agents, Biological Warfare (BW) agents, Toxic Industrial Materials (TIMs) and Toxic Industrial Chemicals (TICs). The UCS provides communication interoperability with Federal, State and local Emergency Responders at a WMD incident.

The JPEO CBD provides centralized program management and Joint Service CBDP acquisition program integration for WMD-CST. The JPEO has assigned responsibility for this program to Joint Project Manager Guardian (JPMG).

FY04 Accomplishments

- Continued development of Unified Command Suite (UCS) Increment I.
- Provided government engineering and planning support to Analytical Laboratory System (ALS) Block I.

FY05 Objectives

- Develop UCS Increment I Prototypes.
- Conduct ALS Block I Compound Selection.
- Government Engineering and Management Support.

Contractors

Naval Air Warfare Center Aircraft Division
St Inigoes, MD

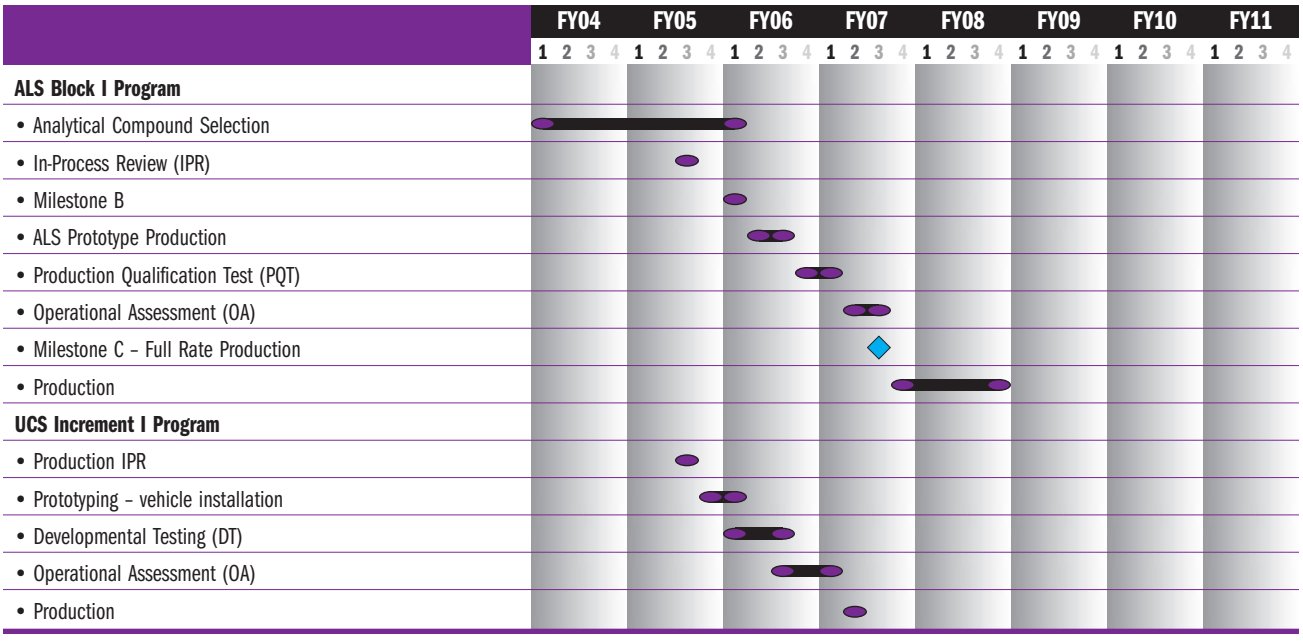
Argon Electronics
Luton, UK

Wolf Coach
Auburn, MA

FY06 Objectives

- Conduct ALS Block I Milestone B.
- Conduct Developmental Operational Assessments of the UCS Increment I and ALS Blk I upgrades.
- Full Rate Production Decision Brief for UCS Increment I.
- Provide government engineering and planning support.
- Develop ALS Block I Prototypes.

ACQUISITION PHASE



Homeland Defense

Chemical Biological Installation/Force Protection Program (FORCE PROT)

- **The Joint Project Manager Guardian's Installation Protection Program is an integrated and optimized suite of highly effective chemical, biological, and radiological detection, identification, warning, information management, protection, decontamination, medical surveillance and response capabilities**
- **Ensures adequate and effective CBRN Consequence Management and Mission Assurance at 200 installations**

Program Description

In response to the events of September 11, 2001, an Anti-Terrorism task force was formed to come up with emergency lists for equipment for the CB Installation protection program, CB Emergency First Response Program and Homeland Security Bio Detection initiative.

These task force decisions resulted in PBD 289/C/C1/C2 and C3. PBD 289 required a pilot program to outfit 9 installations, 3 for Army, 3 for Air Force, and 3 for Navy/Marine Corps. The PBD stated that biological and chemical detection only is required. The installations included: Warner-Robbins AFB, Pope AFB, Barksdale AFB, Ft Campbell, Ft Lewis, Ft Gordon, NSWC Dahlgren, Naval Base San Diego, Camp Lejeune, USMC.

The Joint Service Installation Pilot Program (JSIPP) demonstrated the efficacy of an integrated suite of highly effective chemical and biological sensors and support equipment installed at the previously identified installations. The suite provided tiered sampling/collection, detection, identification and warning response capabilities. It was designed to provide early, indoor/outdoor collection, detection, presumptive identification and warning capabilities, and proved the need to expand this concept.

The Joint Project Manager Guardian (JPMG) Installation Protection Program (IPP) consists of a highly effective and integrated Chemical Biological Radiological (CBR) installation protection and response capability. This capability includes detection, identification, warning, information management, individual and collective protection, restoration, and medical surveillance, protection and response. The communications network will leverage existing capabilities and be integrated into the base operational command and control infrastructure. JPMG will procure and field an effective and optimized CBR installation protection and response capability at 200 DoD installations from FY04-FY11.

FY04 Accomplishments

- Initiated installation site surveys.
- Initiated software development of a CBR decision support system tool needed to integrate CBR capability.
- Initiated an improved and lower cost biological aerosol warning system using Dry Filter Units and Biological Analysis Facilities. Systems provide improved warning of a potential biological release, supporting more rapid consequence management.
- Initiated development and improvement of an NBC warning system to support unique installation warning and reporting requirements.

Contractors

SAIC
ABINGDON, MD

- Initiated installation design for first DoD installation.
- Integrated full time TIC detection and identification.

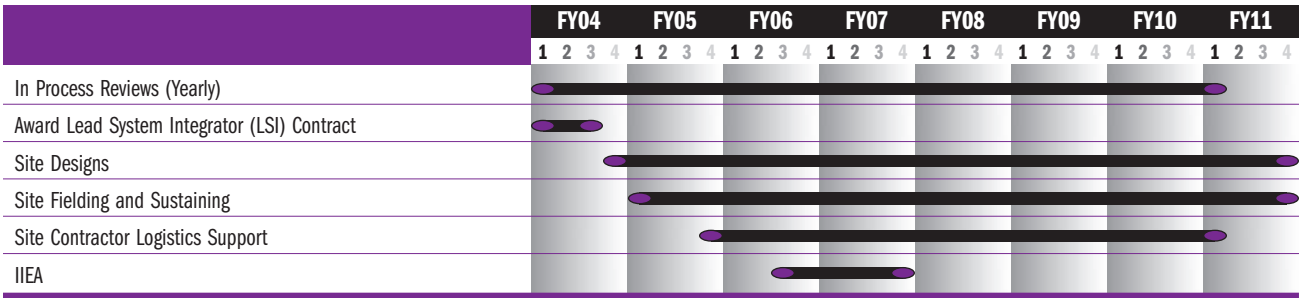
FY05 Objectives

- Continue Conducting Installation Site Surveys.
- Complete software development of a CBR knowledge base decision support system with Defense Information Technology Security Certification and Accreditation Process (DITSCAP) approval.
- Develop a national biological analysis facility network.
- Develop designs for 22 DoD IPP installations.
- Initiate fielding at 11 DoD installations.

FY06 Objectives

- Conduct 24 installation site surveys.
- Conduct 24 installation designs.
- Conduct fielding at 26 additional installations.
- Conduct sustainment operations for 28 installations.
- Conduct fielding at FY05 installations.

Acquisition Phase



Acronyms

AAE Army Acquisition Executive

AAS Advanced Anticonvulsant System

ACADA Automatic Chemical Agent Detector Alarm

ACAT Acquisition Category

ACI&C Arms Control Implementation and Compliance

ACTD Advanced Concept Technology Demonstration

ADM Acquisition Decision Memorandum

AFCESA Air Force Civil Engineer Support Agency (Air Staff Field Operating Agency)

AFOTEC Air Force Operational Test and Evaluation Command

AFRL Air Force Research Laboratory

AFRRI Armed Forces Radiobiology Research Institute

AFS Alternative Footwear System

ALS Analytical Laboratory System

APOD Aerial Port of Debarkation

ARL Army Research Laboratory

ASA(ALT) Assistant Secretary of the Army (Acquisition, Logistics, and Technology)

ATD Advanced Technology Development

ATEC Army Test and Evaluation Command

ATNAA Antidote Treatment–Nerve Agent, Autoinjector

ATP Allied Technical Publication

ATSD(NCB) Assistant to the Secretary of Defense for Nuclear, Chemical, and Biological

AVA Anthrax Vaccine Adsorbed

BAWS Biological Agent Warning System

BD Biological Detection

BIDS Biological Integrated Detection System

BLA Biologics License Application

BoNT Botulinum Neurotoxins

BSDS Biological Standoff Detection System

BW Biological Warfare

BWA Biological Warfare Agents

C4ISR Command, Control, Communication, Computers, Intelligence, Surveillance and Reconnaissance

CAD Component Advanced Development

CASPOD Contamination Avoidance at Seaports of Debarkation

CB Chemical and Biological

CBD Chemical Biological Defense

CBDP Chemical Biological Defense Program

CBIAC Chemical and Biological Defense Information Analysis Center

CBMS Chemical, Biological Mass Spectrometer

CBPS Chemically & Biologically Protected Shelter

CBR Chemical, Biological, and Radiological

CBRN Chemical, Biological, Radiological, and Nuclear

CBRNE Chemical, Biological, Radiological, Nuclear and High-Yield Explosive

CBW Chemical and Biological Warfare

CE Concept Exploration

CGLO Coast Guard Liaison Officer

cGMP Current Good Manufacturing Practices

CHEMRATS Chemical Hazard Estimation Method and Risk Assessment Tools

CIIT Capabilities Improvement Initiative Team

CINC Commander in Chief

COCOM Combatant Command

CONOPS Concepts of Operations

COTS Commercial off-the-shelf

CP Collective Protection

CP DEPMEDS Chemically Protected Deployable Medical System

CPE Collective Protection Equipment

CP EMEDS Collectively Protected Expeditionary Medical Support

CPFH Collectively Protected Field Hospitals

CPS Collective Protection System

CPSBKFT Collective Protection System Backfit

CUGR CBRN Unmanned Ground Reconnaissance

CUGV CBRN Unmanned Ground Vehicle

CVC Combat Vehicle Crewman

CW Chemical Warfare

CWA Chemical Warfare Agent

DAE Defense Acquisition Executive

DARPA Defense Advanced Research Projects Agency

DATSD(CBD) Deputy Assistant to the Secretary of Defense (Chemical Biological Defense)

DDR Detailed Design Reviews

DDR&E Director, Defense Research and Engineering

DHHS Department of Health and Human Services

DITSCAP Defense Information Technology Security Certification and Accreditation Process

DNA Deoxyribonucleic Acid

DoD Department of Defense

DOE Department of Energy

DOE Design of Experiments

DOT&E Developmental and Operational Test and Evaluation

DOTMLPF Doctrine, Organization, Training, Material, Leadership and Education, Personnel, and Facilities

DPG Dugway Proving Ground

DRF Dose-Reduction Factor

DT Developmental Test; Developmental Testing

DT&E Developmental Test & Evaluation

DTAP Defense Technology Area Plan

DTIC Defense Technology Information Center

DTO Defense Technology Objectives

DTRA Defense Threat Reduction Agency

DTRA CBD Defense Threat Reduction Agency, Chemical Biological Directorate

DUSD(AS&C) Deputy Under Secretary of Defense for Advanced Systems and Concepts

ECBC Edgewood Chemical and Biological Center

ECP Engineering Change Proposal

ECU Environmental Control Unit

EDT Engineering Design Test

EEE Eastern Equine Encephalitis

ESLI End-of-Service Life Indicator

FAT First Article Test

FCBs Functional Capability Boards

FDA Food and Drug Administration

FDDT Field Durability Development Test

FOC Full Operational Capability

FORCEPROT Installation Force Protection Program

FRP Full Rate Production

FTIR Fourier Transform Infrared

FUE First Unit Equipped

FY Fiscal Year

FYDP Future Years Defense Program

GCCS Global Command and Control System

GDLS General Dynamics Land System

GFE Government Furnished Equipment

GLP Good Laboratory Practices

GOTS Government off-the-shelf

GPS Global Positioning System

HMD Helmet Mounted Display

HMMWV High Mobility Multipurpose Wheeled Vehicle

HVAC Heating, Ventilation, and Air-Conditioning

IAEA International Atomic Energy Agency

IBAD Interim Biological Agent Detector

ICPS Improved Collective Protection System

ICW Interactive Course Ware

IFS Integrated Footwear System

IHADSS Integrated Helmet and Display Sight System

ILS Integrated Logistics Support

IOC Initial Operational Capability

IOT&E Initial Operational Test & Evaluation

IP Individual Protection

IPE Individual Protection Equipment

IPM Improved Protective Mask

INATS Improved Nerve Agent Treatment System

IPP Installation Protection Program

IPR In-Progress/In-Process/Interim Program Review

IPT Integrated Product Team

ISO International Organization for Standardization

IT Integrated Test

ITF International Task Force

IV&V Independent Validation and Verification

JASQ JSLIST Additional Source Qualification

JBAIDS Joint Biological Agent Identification and Diagnosis System

JB2GU JSLIST Block II Glove Upgrade

JBPDS Joint Biological Point Detection System

JBSDS Joint Biological Standoff Detection

JBTDS Joint Biological Tactical Detection System

JCBAWM Joint Chemical Biological Agent Water Monitor

JCD-CBRND Joint Combat Developer for CBRN Defense

JCID JWARN Communications Interface Device

JCIDS Joint Capabilities Integration and Development System

JCPE Joint Collective Protection Equipment

JCS Joint Chiefs of Staff

JCSD Joint Command Service Detection

JEM Joint Effects Model

JFC Joint Force Commander

JFCOM Joint Forces Command

JIC JWARN Initial Capability

JOC Joint Operations Concepts

JOEF Joint Operational Effects Federation

JOpsC Joint Operations Concepts

JORD Joint Operational Requirements Document

JPACE Joint Protective Aircrew Ensemble

JPEO-CBD Joint Program Executive Office for Chemical and Biological Defense

JPID Joint Platform Interior Decontamination

JPM Joint Program Manager

JPM-IS JPM Information Systems

JPMG Joint Project Manager Guardian

JRO Joint Requirements Office

JROC Joint Requirements Oversight Council

JRO-CBRN Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear

JSAM Joint Service Aircrew Mask

JSCBIS Joint Service Chemical Biological Information System

JSCESM Joint Service Chemical Environmental Survivability Mask

JSFDS Joint Service Family of Decontamination Systems

JSGPM Joint Service General Purpose Mask

JSIPP Joint Service Installation Protection Project

JSLC Joint Senior Leaders' Course

JSLIST Joint Service Lightweight Integrated Suit Technology

JSLNBCRS Joint Service Light Nuclear Biological Chemical Reconnaissance System

JSLSCAD Joint Service Lightweight Standoff Chemical Agent Detector

JSMLT Joint Service Mask Leakage Tester

JSPDS Joint Service Personnel/Skin Decontamination System

JSSED Joint Service Sensitive Equipment Decontamination

JSTDS Joint Service Transportable Decontamination System

JSTDS-SS Joint Service Transportable Decontamination System Small Scale

JSTO-CBD Joint Science and Technology Office for Chemical and Biological Defense

JTTP Joint Tactics, Techniques, and Procedures

JWARN Joint Warning and Reporting Network

KPP Key Performance Parameters

LAV Lightweight Armored Vehicle

LISA Laser Interrogation of Surface Agents

LMS Light Multipurpose Shelter

LOE Limited Objective Experiment

LPU Limited Procurement Urgent

LRIP Low Rate Initial Production

LRU Line Replaceable Unit

LSI Lead System Integrator

LUT Limited User Test

M&S Modeling and Simulation

MCA Major Capability Area

MCOTEA Marine Corps Operational Test and Evaluation Activity

MCS Maneuver Control System

MDA Milestone Decision Authority

MDAP Major Defense Acquisition Program

MF2K Medical Force 2000

MEDCHEM Medical Chemical Defense

MIST Man-in-Simulant Test

MOPP Mission Oriented Protective Posture

MOT&E Multi-Service Operational Test and Evaluation

MRI Medical Reengineering Initiative

MRTFB Major Range and Test Facility Base

MS Milestone

MTTP Muti-Service Tactics, Techniques, and Procedures

MULO Multipurpose Overboot

NATO North Atlantic Treaty Organization

NAWC Naval Air Warfare Center

NBC Nuclear, Biological and Chemical

NBCDACS Nuclear, Biological, Chemical Detection, Analysis, and Communication Software

NBCRV Nuclear Biological Chemical Reconnaissance Vehicle

NCES Network Centric Enterprise Services

NDA New Drug Application

NDI Non-Developmental Item

NET New Equipment Training

NGA Next Generation Anthrax Vaccine

NMRC U.S. Navy Medical Research Center

NR Net Ready

NRC National Research Council

NSC Natick Soldier Center

NSWC Naval Surface Warfare Center

NTA Non-Traditional Agents

O&M Operations and Maintenance

OA Operational Assessment

OCONUS Outside the Continental United States

OIPT Overarching Integrated Product Team

ONR Office of Naval Research

OPEVAL Operational Evaluation

OPTEVFOR Operational Test and Evaluation Force

ORD Operational Requirements Document

OSD Office of the Secretary of Defense

OT Operational Test; Operational Testing

OTA Operational Test Activity

OT&E Operational Test and Evaluation

P3I Pre-Planned Product Improvement

PAIO Program Analysis and Integration Office

PATS Protective Assessment Test System

PD Preliminary Demo

PD-TESS Project Director for Test Equipment, Strategy, and Support

PMA Pre-Marketing Approval

POL Petroleum, Oil, and Lubricants

POM Program Objective Memorandum

PQT Preliminary/Production Qualification Test

PVT Product Verification Test

R&D Research and Development

RDA Research, Development, and Acquisition

RDT&E Research, Development, Test and Evaluation

RestOps Restoration of Operations

RFP Request for Proposal

ROMO Range of Military Operations

RSCAAL Remote Sensing Chemical Agent Alarm

S&T Science and Technology

SAMP Single Acquisition Management Plan

SDD System Development and Demonstration

SER System Evaluation Report

SERPACWA Skin Exposure Reduction Paste Against Chemical Warfare Agents

SIS Science information Support

SNAPP Soman Nerve Agent Pyridostigmine Pretreatment

SOCOM Special Operations Command

SSA Software Support Activity

SPOD Sea Ports of Debarkation

SSS Small Shelter System

STAFFS Simulation, Training and Analysis for Fixed Sites

STI Science and Technology Information

SVR System Verification Review

TALP Tunnel Airlock for Litter Patients

TARA Technology Area Review and Assessment

TAS Threat Agent Science

TBD To Be Determined

TEMP Test and Evaluation Master Plan

TICs Toxic Industrial Chemicals

TIMs Toxic Industrial Materials

TM Technical Manual

TMIP Theater Medical Information Program

TOR Tentative Operational Requirement

TRL Technology Readiness Level

TTP Tactics, Techniques, and Procedures

UCS Unified Command Suite

USA United States Army

USACMLS U.S. Army Chemical School

USAF United States Air Force

USAMRICD U.S. Army Medical Research Institute of Chemical Defense

USAMRIID U.S. Army Medical Research Institute of Infectious Diseases

USAMRMC U.S. Army Medical Research and Materiel Command

USAR United States Army Reserve

USCG United States Coast Guard

USD(AT&L) Under Secretary of Defense for Acquisition, Technology, and Logistics

USD(Policy) Under Secretary of Defense for Policy

USJFCOM U.S. Joint Forces Command

URCD Urgent Requirements Capabilities Document

USMC United States Marine Corps

USN United States Navy

VAC BOT Botulism Vaccine

VAC ENC Encephalitis Vaccine

VAC NGA Next Generation Anthrax Vaccine

VAC PLG Plague Vaccine

VAC SPX Smallpox Vaccine

VEE Venezuelan Equine Encephalitis

VIG Vaccine Immune Globulin

WEE Western Equine Encephalitis

WGs Working Groups

WIPT Working Integrated Process Team

WMD Weapons of Mass Destruction

WMD-CST Weapons of Mass Destruction–Civil Support Teams

WSLAT Whole System Live Agent Testing

WWW World Wide Web

CB Defense on the Web

Air War College: United States Air Force Counterproliferation Center
http://www.au.af.mil/au/awc/awcgate/awc-cps.htm

The CPC undertakes and directs counterproliferation research and education. This involves assessing nuclear, biological, chemical, and missile (NBC/M) proliferation threats and the means of addressing those threats. This also includes research and education on such topics as appropriate military and diplomatic strategy when confronting NBC/M opponents, active defenses, counterforce capabilities, passive defenses, international nonproliferation diplomacy, nonproliferation and arms control treaty regimes, NBC/M export controls, U.S. and allied force protection measures against weapons of mass destruction (WMD) threats, counter-terrorist activities, deterrence of conflicts, and deterrence of escalation of conflicts involving WMD opponents.

Anthrax Vaccine Immunization Program
http://www.anthrax.osd.mil/

Armed Forces Radiobiology Research Institute (AFRRI)
http://www.afrri.usuhs.mil/

AFRRI conducts research in the field of radiobiology and related matters essential to the operational and medical support of the U.S. Department of Defense and the military services.

Arms Control Implementation and Compliance (ACI&C)
http://www.defenselink.mil/acq/acic/

Bureau of Arms Control (archive site)
http://www.state.gov/www/global/arms/bureauac.html

Bureau of Nonproliferation (archive site)
http://www.state.gov/www/global/arms/bureaunp.html

Bureau of Political-Military Affairs (archive site)
http://www.state.gov/www/global/arms/bureaupm.html

Bureau of Verification and Compliance (archive site)
http://www.state.gov/www/global/arms/bureauvc.html

Chemical and Biological Defense Information Analysis Center (CBIAC)
http://www.cbiac.apgea.army.mil/

CBIAC generates, acquires, processes, analyzes, and disseminates CB Science and Technology Information (STI) in support of the CINCs, warfighters, the Reserve Components, the CB Defense Research, Development, and Acquisition community, and other federal, state, and local government agencies.

Cooperative Monitoring Center, Sandia National Laboratory
http://www.cmc.sandia.gov/

Sandia's history includes a long-time involvement with U.S. treaty verification and monitoring programs, leadership in systems engineering for the U.S. nuclear weapons program, and leadership of U.S. nuclear stewardship activities. In combination with complementary expertise at other Department of Energy National Laboratories, these activities have resulted in a unique systems-level approach to problem solving and a broad spectrum of technology-based tools that can be applied to the challenges of cooperative monitoring.

Counterproliferation Chemical Biological Defense (CP/CBD)
http://www.acq.osd.mil/cp/

CP/CBD Web is the Internet point-of-contact for United States Department of Defense Counterproliferation and Chemical Biological Defense Information.

Defense Advanced Research Projects Agency (DARPA)
http://www.darpa.mil/

The Defense Advanced Research Projects Agency (DARPA) is the central research and development organization for the Department of Defense (DoD). It manages and directs selected basic and applied research and development projects for DoD, and pursues research and technology where risk and payoff are both very high and where success may provide dramatic advances for traditional military roles and missions.

Defense Technical Information Center (DTIC) Nonproliferation and Arms Control Technology Working Group
http://www.dtic.mil/

The NPAC TWG was created by Presidential Directive as the mechanism to coordinate the Research and Development (R&D) response to these challenges while operating within constrained funding guidelines.

Defense Threat Reduction Agency (DTRA) Chemical and Biological Defense Directorate
http://www.dtra.mil/Toolbox/cbd.cfm

The Defense Threat Reduction Agency's Chemical and Biological Defense Directorate manages and integrates all DoD chemical and biological science and technology efforts and performs program financial management functions.

Department of Energy National Nuclear Security Administration
http://www.nn.doe.gov/

Edgewood Chemical and Biological Center (ECBC)
http://www.edgewood.army.mil/

The Edgewood Chemical Biological Center provides state-of-the-art science, technology and engineering solutions to meet the rapidly changing needs of the warfighter. Located in Edgewood, MD, ECBC offers more than 85 years experience in chemical and biological defense and houses many facilities capable of handling items contaminated with chemical, biological or radiological materials.

Institute for National Security Studies
http://www.usafa.af.mil/inss/

The USAF Institute for National Security Studies promotes national security research for the Department of Defense within the military academic community and supports the Air Force national security education program.

International Atomic Energy Agency (IAEA)
http://www.iaea.org/

The IAEA serves as the world's central intergovernmental forum for scientific and technical co-operation in the nuclear field, and as the international inspectorate for the application of nuclear safeguards and verification measures covering civilian nuclear programs.

Joint Program Executive Office for Chemical and Biological Defense
http://www.jpeocbd.osd.mil/

Department of Energy Office of Defense Nuclear Nonproliferation
http://www.nnsa.doe.gov/na-20

The mission of the Office of Defense Nuclear Nonproliferation (DNN) is to detect, prevent, and reverse the proliferation of weapons of mass destruction, while mitigating the risks from nuclear operations.

Missile Defense Agency (MDAlink)
http://www.mda.mil

MDA develops military effective defenses against ballistic missiles. This page of their site explains the organization and provides links to the organization chart and personnel.

Naval Treaty Implementation Program
http://www.nawcwpns.navy.mil/~treaty/

U.S. participation in International Arms Control Treaties and Agreements is designed to enhance U.S. national security and to help preserve peace by joining with other sovereign states in measures aimed at eliminating military weapons, controlling weapons technology, or promoting understanding between those who sign on to the agreement.

NBC Industry Group
http://www.nbcindustrygroup.com/

The NBC Industry Group is composed of over 140 companies, not-for-profit organizations, and consultants who support nuclear chemical and biological warfare defense activities. In addition to military defense against chemical and biological warfare, interests of the Group encompass domestic preparedness against chemical and biological terrorism as well as the Chemical Weapons Convention and other treaties.

NBC Medical Defense Information Server
http://www.nbc-med.org/

The Nuclear Biological and Chemical Medical (Med-NBC) web page contains extensive medical documentation, training material, audio-video clips, a powerful search engine, and links to other related Internet sites.

Office of the Under Secretary of Defense for Acquisition, Technology & Logistics
http://www.acq.osd.mil/

ACQweb is a publicly-accessible site and contains vast amounts of information about our functions, activities and projects.

Research, Development and Engineering Command (RDECOM)
http://www.rdecom.army.mil

RDECOM provides science and engineering services for developing, acquiring, supporting and disposing of Army materiel. RDECOM provides additional support for conducting S&T research, engineering development, engineering support of deployed materiel and its modernization.

United States Army Chemical Materials Agency (CMA)
http://www.cma.army.mil

The purpose of the U.S. Army's Chemical Materials Agency (CMA) is to protect and safely store the nation's aging chemical weapons, while working toward the effective recovery, treatment and ultimate elimination of the nation's chemical warfare materiel and to enhance national security. The agency develops and uses technologies to safely store and eliminate chemical weapons while protecting the public, its workers and the environment. CMA also provides support to National Defense and the American Soldier through its industrial base missions.

United States Army Chemical School
http://www.wood.army.mil/usacmls/

United States Army Medical Research and Materiel Command
https://mrmc-www.army.mil/

United States Army Medical Research Institute of Infectious Diseases
http://www.usamriid.army.mil

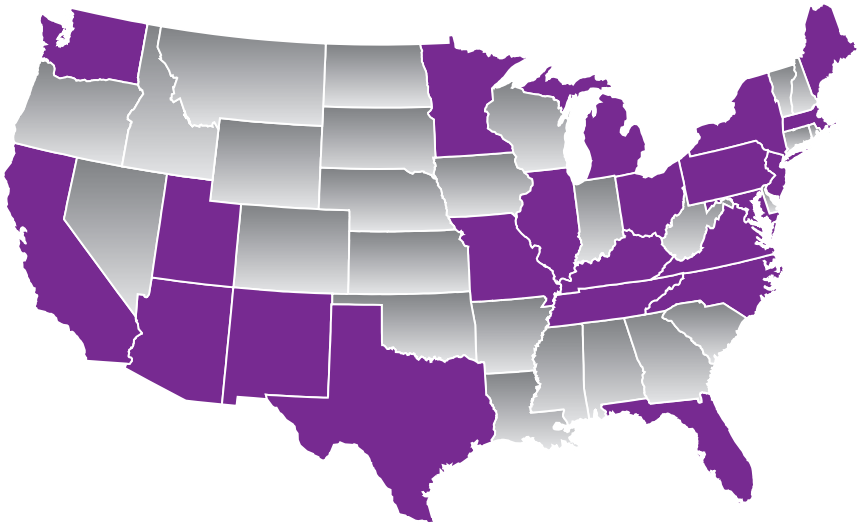
USAMRIID, (Fort Detrick, Maryland) conducts basic and applied research on biological threats resulting in medical solutions to protect military service members. USAMRIID, an organization of the U.S. Army Medical Research and Materiel Command, is the lead medical research laboratory for the U.S. Biological Defense Research Program. The Institute plays a key role as the only laboratory in the DoD equipped to safely study highly hazardous infectious agents requiring maximum containment at biosafety level (BSL)-4.

United States Army Soldier Systems Center (SSC)
http://www.ssc.army.mil

The SSC is the Army's one-stop soldier-support organization. It is responsible for researching, developing, fielding, and managing food, clothing, shelters, airdrop systems, and soldier support items.

United States Department of State
http://www.state.gov/

Consolidated Program Locator Map



Arizona
Northrop Grumman

California
Lawrence Livermore National Laboratory (LLNL)
Hamilton Sundstrand Sensor Systems
National Steel and Shipbuilding Company (NASSCO)
Naval Air Warfare Center (NAWC)
SPAWAR Systems Center

District of Columbia
Armed Forces Institute of Pathology (AFIP)
Armed Forces Radiobiology Research Institute (AFRRI)
Naval Medical Research Center (NMRC)
Naval Research Laboratory (NRL)

Florida
Air Force Research Laboratory (AFRL)
Northrop Grumman
Quick Protective Systems

Illinois
Naval Surface Warfare Center (NSWC), Crane Division

Kentucky
NISH

Maine
Creative Apparel
NISH

Maryland
Air Techniques International
Armed Forces Institute of Pathology (AFIP)
Battelle
Bruhn-Newtech
DynPort Vaccine Company
Edgewood Chemical Biological Center (ECBC)
McKesson BioServices
Naval Medical Research Center (NMRC)
Naval Air Warfare Center Aircraft Division
SAIC
SFA Inc.
Science & Engineering Services, Inc.
U.S. Army Medical Research Institute of Chemical Defense (USAMRICD)
U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID)
Walter Reed Army Institute of Research (WRAIR)

Massachusetts
MIT
Natick Soldier Center (NSC)
NCTRF
Wolf Coach

Michigan
AM General
AVON Protection Systems
General Dynamics Land System
NISH

Minnesota
TSI Inc.

Missouri
Engineered Air Systems
Production Products Inc.

New Jersey
CECOM

New Mexico
Los Alamos National Laboratory (LANL)
U.S. Air Force Operational Test & Evaluation Center

New York
AVOX

North Carolina
Army Research Office (ARO)
General Dynamics

Ohio
Air Force Research Laboratory (AFRL)
American Fan Company
Guild Associates
Hunter Manufacturing Company

Pennsylvania
Anderson Metal Industries, Inc.

Tennessee
National Oceanic and Atmospheric Administration (NOAA)
Oak Ridge National Laboratory

Texas
Air Force Research Labs (AFRL)
NISH
Texas A&M
USAF School of Aerospace Medicine

Utah
Dugway Proving Ground
Idaho Technology Inc.

Virginia
CACI
Defense Threat Reduction Agency (DTRA)
Institute for Defense Analysis (IDA)
Marine Corps Operational Test & Evaluation Activity
Naval Surface Warfare Center, Dahlgren Division (NSWC)
New World Associates
Norfolk Shipbuilding Company (NORSHPCO)
Office of Naval Research (ONR)
Operational Test & Evaluation Force

Washington
Cubic Applications Inc.

International Partners

Canada
ACTON Inc.
Canadian Commercial Corporation
Cloutier
General Dynamics

United Kingdom
Argon Electronics
Defense Science and Technology Laboratory
Smith's Detection

Joint Service Chemical and Biological Defense Program
FY06–07 Overview

Requests for this document should be directed to:

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to the Secretary of Defense
(Chemical Biological Defense)
3050 Defense Pentagon, Room 3C257
Washington, DC 20301-3050